

Point Beach Solar, LLC
Solar CPCN Application
Manitowoc County, Wisconsin
PSC Docket No. 9802-CE-100
May 3, 2019

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TERMS/ACRONYMS	DEFINITIONS
AC	Alternating Current
AHI	Wisconsin Architecture and History Inventory
Applicant	Point Beach Solar, LLC
ATC	American Transmission Company, LLC
BESS	Battery Energy Storage System
BMPs	Best Management Practices
CCP	Construction Compliance Plan
CIP	Critical Infrastructure Protection
Commission	Public Service Commission of Wisconsin
Commonwealth	Commonwealth Heritage Group
CPCN	Certificate of Public Convenience and Necessity
CPR	Clean Power Research
CRP	Conservation Reserve Program
CTH	County Highway
CV	Curve Number
CY	Cubic Yards
DATCP	Department of Agriculture, Trade and Consumer Protection
dBA	Decibels A-weighted
dBC	Decibels C-weighted
DC	Direct Current
DPP	Definitive Planning Phase
EMF	Electric and Magnetic Fields
ER	Endangered Resources
ESA	Environmental Site Assessment
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FIRMs	Flood Insurance Rate Maps
Gen-Tie	The 138 kV generation transmission tie-line, less than one mile in length, that will carry the electricity from the Project Substation
GHI	Global Horizontal Irradiance
GIS	Geographic Information Systems
HDD	Horizontal Directional Drilling
Ice Age Trail	Ice Age National Scenic Trail
kWh	Kilowatt Hour
LGIA	Large Generator Interconnection Agreement
MISO	Midcontinent Independent System Operator
MPT	Main Power Transformer
MTF	Main Transformer Foundation
MW	Megawatt
MVA	Mega Volt Amp
MWh	Megawatt Hour
NCF	Net Capacity Factor

TERMS/ACRONYMS	DEFINITIONS
NEC	National Electric Code
NEE	NextEra Energy, Inc.
NEER	NextEra Energy Resources, LLC.
NERC	North American Electric Reliability Council
NHI	Natural Heritage Inventory
NOAA-NCEP	National Oceanic and Atmospheric Administration – National Centers for Environmental Protection
Noise Protocols	Public Service Commission of Wisconsin’s Measurement Protocol for Sound and Vibration Assessment of Proposed and Existing Electric Power Plants
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
O&M	Operation & Maintenance
PCU	Power Conversion Unit
POI	Point of Interconnection
Point Beach Nuclear	Point Beach Nuclear Plant, Units 1 and 2
Point Beach Solar	Point Beach Solar, LLC
PPA	Power Purchase Agreement
Project	Point Beach Solar and its associated facilities
Project Study Area	The properties located within an approximately 1,360-acre area within the Town of Two Creeks, in Manitowoc County, Wisconsin where the final Project will be sited
Project Site	The approximately 565-acre area within the Project Study Area where the final Project facilities will be sited. The Project Site includes the area in which both Proposed Array and Alternative Array are proposed to be located, including, but not limited to: solar arrays within the permanent fence lines, permanent access roads, generation tie-line right-of-way, collector substation and Point of Interconnection switchyard ¹
Proposed Array/Alternative Array	The two areas of potential solar panel and related facility locations within the Project Study Area and Project Site, comprised of Point Beach Solar’s preferred array of solar panels and related facilities (Proposed Array) and an alternative array of solar panels and related facilities (Alternative Array).
PSCW	Public Service Commission of Wisconsin
PV	Photovoltaic
RECs	Recognized Environmental Conditions
RFP	Request for Proposal
ROCC/ERCC	Renewable Operations and Control Center/Energy Resources Control Center

¹ The final Project footprint will be sited on approximately 465 acres of land, as it will require less than the proposed 565-acre area which includes the Proposed Array and the Alternative Array.

TERMS/ACRONYMS	DEFINITIONS
ROW	Right-of-Way
SNA	State Natural Area
SPCC	Spill Prevention, Control, and Countermeasures
Stantec	Stantec Consulting Services
STEM	Science, Technology, Engineering & Math
SWPPP	Stormwater Pollution Prevention Plan
Two Creeks Solar	Two Creeks Solar, LLC
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
US EPA	United States Environmental Protection Agency
WDNR	Wisconsin Department of Natural Resources
WEPCO	Wisconsin Electric Power Company
Wetland Study Area	Wetland and Water Resources within the Project Study Area as Described in the Wetland Delineation Report
WHS	Wisconsin State Historical Society
WisDot	Wisconsin Department of Transportation
WMAs	Wildlife Management Areas
WPA	Waterfowl Protection Area
WPDES	Wisconsin Pollutant Discharge Elimination System
WRP	Wetland Reserve Program
WWI	Wisconsin Wetland Inventory

1. Project Description and Overview

1.1 General Project Location and Description of Project and Project Area

Point Beach Solar, LLC (Point Beach Solar) is an independent power producer (IPP) proposing a 100 megawatts (MW) alternating current (AC) photovoltaic (PV) solar generating facility and associated interconnection facilities (the Project).² The Project will be located on approximately 465 acres of agricultural land in Manitowoc County.³ The land required for the Project will be a combination of acres owned by an indirect affiliate of Point Beach Solar and acres leased from participating landowners.

As described in more detail in Section 1.4.2.1.1, Point Beach Solar selected the Project Site based upon several factors. First, as described in Solar Resource Assessment performed for the Project provided as Appendix F, based upon on-site meteorological data the Project Study Area was determined to be suitable for solar development. Second, the Commission recognized in a prior proceeding that new electric generation projects likely would be developed on the Project Site. Third, the majority of the land comprising the Point Beach Solar Project is owned by an affiliate of Point Beach Solar as a result of a series of transactions considered and previously approved by the Commission. The majority of the Project Site acreage is owned by that affiliate, while less than half of the remaining acreage of the Project Site will be comprised of acreage leased from participating landowners. Using Applicant's affiliate-owned property decreases the need for the use of adjoining properties and minimizes the use of farmland of non-affiliated property owners. Fourth, the Midcontinent Independent System Operator (MISO) found that the Project is suitable for additional generation from an injection capacity perspective. Fifth, the Project Site contains large tracts of undeveloped agricultural land suitable for the construction of a solar generation system. Sixth, there are no significant adverse impacts on the environment or cultural or historic resources expected from the construction and operation of the proposed Project. Seventh, the proposed Project is in close geographic proximity to affiliates of Point Beach Solar. This will potentially enable the Applicant to obtain synergies in the operation and maintenance of the Project. Finally, community and landowner feedback helped guide the siting of the Project.

The Project will include the following key elements:

1. Solar Array blocks consisting of PV modules mounted on a single-axis, horizontal tracker mounting system supported by steel posts;
2. Solar modules totaling approximately 143 MW-Direct Current (DC) for the site;

² Point Beach Solar is a wholly-owned indirect subsidiary of NextEra Energy Resources, LLC (NEER). NEER, through its affiliated entities, is the world's largest generator of renewable energy from the wind and sun. An affiliate of NEER also has a substantial and long-standing presence in Wisconsin as the owner and operator of the Point Beach Nuclear Plant, Units 1 and 2 (Point Beach Nuclear), in Two Rivers, Wisconsin.

³ The final Project footprint will be sited on approximately 465 acres of land, as it requires less than the proposed 565-acre Project Site that includes the Proposed Array and the Alternative Array.

3. Electrical collector circuit system infrastructure consisting of DC cabling;
4. Power Conversion Units (PCUs) which includes the inverter and medium voltage transformer;
5. Project Substation located within the project boundary on less than 5 acres with a main step-up transformer, control enclosure, circuit breakers, disconnect switches, relay panels, surge arrestors, grounding system, metering, and communications equipment;
6. Approximately 12 to 20-foot wide gravel access roads that would connect the facility to the existing public roads and provide access to Project equipment; and,
7. 138 kV transmission line and Interconnection Switchyard connecting the Project Substation to the Point of Interconnection (POI). The Interconnection Switchyard is expected to be constructed and owned by American Transmission Company (ATC).

As stated above, The Project will use PV solar modules connected to a single-axis tracking system. The planned solar modules are thin film or mono-crystalline technology and will total approximately 143 MW DC for the entire site. The tracking system will follow the sun from east to west throughout the day. The tracking system will be attached to steel piles driven approximately 10 feet into the ground.

The Project is located in the Town of Two Creeks in Manitowoc County, Wisconsin. The solar PV array will interconnect to the new 138 kV project collector substation just north of the primary array using approximately 12 miles of underground 34.5 kV collection lines. This includes all AC collection lines within the PV array connecting to each of the inverters and eventually combining into up to six circuits running to the collector substation. Finally, a generation transmission tie-line (Gen-Tie) will carry the electricity to the POI located adjacent to the ATC transmission line.

The PV panels will convert sunlight to electric current as the tracking system follows the sun from east to west during the day. The electric current is converted from DC to AC by the PCUs. The PCUs also increase the voltage to a medium voltage level to efficiently move the energy to the collector substation. The collector substation will further increase the voltage to the interconnection voltage of 138 kV.

The Project is also capable of including a Battery Energy Storage System (BESS) at a later date if a definitive decision is made whether to include a BESS. If a BESS is included, it will be within the Project boundary depicted on the Project maps. See **Appendix A – Project Maps**.

A Large Generator Interconnection Agreement (LGIA) was executed on January 22, 2018 by and among Point Beach Solar, ATC, and MISO. The Point Beach Solar MISO Queue Number is J505. As set forth in the LGIA, Point Beach Solar, LLC will construct the less than one-mile Gen-Tie line and project collector substation and ATC will construct and retain ownership of a new three position ring bus and 138kV substation just west of the Point Beach site – called the new Icarus substation. As defined in the LGIA, the Point of

Change of Ownership shall be at the transmission conductor and the shield wire attachment hangs on the dead-end structures in ATC's new Icarus interconnect switching station. The executed LGIA is provided in CONFIDENTIAL **Appendix B**.

The Gen-Tie to be constructed by Point Beach Solar and interconnected to the new Icarus substation is less than one mile in length and therefore does not require a separate transmission CPCN.

Point Beach Solar has used the Public Service Commission of Wisconsin's (PSCW or Commission) "Application Filing Requirements for Wind Energy Projects in Wisconsin" as the basis for the structure and content of this Certificate of Public Convenience and Necessity (CPCN) application (the Application). Point Beach Solar has modified its filing, where appropriate, to account for the fact that this is a solar PV project.

1.1.1 Provide the following information about the project:

1.1.1.1 Project Location – counties and townships in the project area.

Table 1.1.1.1: Counties and townships in the project area

County	Proposed Array		Alternative Array	
	Township/City	Sections	Township	Sections
Manitowoc	Two Creeks	22, 23, and 24	Two Creeks	14

1.1.1.2 Size of project area in acres.

Point Beach Solar reviewed an approximately 1,360-acre study area within the Project boundary (Project Study Area). The Project components, which include the solar arrays, access roads and ancillary facilities, will be sited within approximately 565 acres (Project Site) lying within the Project Study Area. The Project Site includes areas that comprise Point Beach Solar's preferred array of solar panels and related facilities (Proposed Array) and an alternative array of solar panels and related facilities (Alternative Array).

1.1.1.3 Size (rated capacity), in MWs, of the proposed project.

The Project is 100 MW AC and 143 MW DC. Two PV modules currently being considered for the Project are thin film modules and mono crystalline modules.

1.1.1.4 Number of panel sites proposed for the project and the number of alternate panel sites that have been identified

The Proposed Array includes seven panel array areas that are separately fenced. There are three additional panel array areas that are available as the Alternative Array, if selected.

1.1.2 General maps showing the location of the project area, nearest communities, townships, and major roads

See **Appendix A – Project Maps**.

1.2 Ownership

Point Beach Solar will develop, design, construct, interconnect, own, operate, and maintain the Project and sell the output of the project to WPPI Energy as contemplated in a Power Purchase Agreement (PPA) executed on January 12, 2017.

1.3 Project Need/Purpose

Subsections 1.3.1 through 1.3.5 apply to utilities only, and, thus, are not applicable to Point Beach Solar, which is an IPP.

1.3.6 Energy Agreements

1.3.6.1 Identify all Wisconsin utilities under contract for delivery of energy from the proposed project.

As indicated in Section 1.2, Point Beach Solar executed a PPA for delivery of all Energy, Renewable Attributes, Ancillary Services and Capacity from the Project to WPPI Energy on January 12, 2017.

1.4 Alternatives

1.4.1 Not Applicable to Point Beach Solar – applies to utilities only.

1.4.2 Project Area Selection

1.4.2.1 Alternative Project Areas. Describe the project area screening and selection process used to select the proposed project area.

Under the PSCW guidelines for renewable energy development and after discussion with PSCW Staff, Point Beach Solar included in the site layout 25% additional sites for solar panels beyond the minimum necessary for the desired project size of 100 MW. By offering the Commission the ability to select locations of solar panels within the greater Project Area that will comprise an approved project, Point Beach Solar is placing before the Commission a wide variety of feasible alternative locations, limited only by the request that Point Beach Solar be able to optimize the electrical and structural arrangement as certain areas are removed for consideration.

The boundaries of the Point Beach Solar Project Study Area encompass approximately 1,360 acres. This area is far larger than Point Beach Solar needs to complete the Project. These boundaries can encompass a full-scale solar facility and alternatives which offer a variety of different characteristics and allows the Commission to consider multiple configurations for the Project with unique benefits and choices. The impacts described in this document are based on a 125 MW (AC) layout, which is 25% in excess of the capacity of the proposed Project. The 125 MW layout, including designation of primary locations

consisting of 100 MW of capacity is depicted in green as the Proposed Array on the map labeled **Appendix A – 4.1.1 General Map**, areas in blue comprise the Alternative Array were selected to provide a 25% alternative area for the Project array. As explained in Section 1.4.2.1.1, the preferred Project area and alternative Project areas were selected based on the same criteria: transmission and injection capacity, proximity to existing land and infrastructure, constructability (such as topography, environmental factors), site suitability, cultural and historical resources, construction and operation & maintenance (O&M) efficiencies, and customer and landowner feedback on the placement of the arrays and Gen-Tie line.

The primary difference between the Proposed Array and Alternative Array is that the Proposed Array utilizes larger contiguous parcels that allow for more efficient utilization of the PV panels, and, therefore, maximizes the energy and capacity production of the Project. The Alternative Array results in more potential impacts on a per acre basis to existing wetlands and environmental features that can be avoided by selecting the preferred Project Area. Also, the Proposed Array minimizes the amount of tree clearing to the extent practicable. In addition, the Alternative Array is not contiguous with the Proposed Array making incorporation of the Alternative Array more complex and costly. Thus, the Proposed Array is better suited for development, construction, and operation of the Project when compared to the Alternative Array.

1.4.2.1.1 List individual factors or site characteristics used in project area selection.

Point Beach Solar has considered development of this utility-scale solar energy project in Wisconsin since 2015 due to the ongoing decline in the cost of solar energy that would provide Wisconsin utilities an opportunity to source clean energy within the state at an affordable price.

Point Beach Solar reviewed several solar resource datasets to identify areas within the state with adequate solar resources. Based on data collected for Point Beach Solar's Solar Resource Assessment, the Point Beach Project Study Area was identified as suitable for solar development. The Solar Resource Assessment is provided in **Appendix F**.

On June 6, 2016, WPPI Energy issued a Request for Proposals (RFP) for Renewable Energy Supply for a long-term PPA from a renewable energy resources from a new or existing facility. As a result of this solicitation, Point Beach Solar submitted a formal bid for the Project.

In January 2017, WPPI Energy and Point Beach Solar executed a PPA for the Point Beach Solar Project with a commercial operation date of October 1, 2021.

The following individual factors and site characteristics were applied to the selection process of the Proposed Array and Alternative Array:

- Existing Site
 - A significant portion of the proposed generating facility site involves property included in the series of transactions considered and approved

by the Commission pertaining to the sale of the Point Beach Nuclear Plant by Wisconsin Electric Power Company (WEPCO) to FPL Energy Point Beach, LLC, an affiliate of Point Beach Solar. *See* Application, January 5, 2007, *In the Matter of the Application for All Approvals Necessary for the Transfer of Ownership and Operational Control of the Point Beach Nuclear Power Plant from Wisconsin Electric Power Company (d/b/a We Energies) to FPL Energy, a subsidiary of FPL Group, Inc.*, Docket No. 6630-EI-113 (PSC REF#: 67302). In approving those transactions, the Commission recognized that new electric generation projects likely would be developed by the purchaser or its affiliates on that property. *See* Final Decision, September 25, 2007, Docket No. 6630-EI-113 (PSC REF#: 82880), p. 10. Therefore, the proposed Project is consistent with this prior Commission order.

- Proximity to Existing Available Land and Infrastructure
 - An affiliate of Point Beach Solar owns and operates the nearby Point Beach Nuclear facility and owns a sizeable portion of property surrounding the facility. Therefore, the majority of the Project Site acreage is owned by that affiliate, while less than half of the remaining acreage of the Project Site will be comprised of acreage leased from participating landowners. Point Beach Solar considered the ability to utilize this existing available land and nearby personnel as a way to minimize any undue landowner impacts and as a cost-saving factor in the development of the Project. Point Beach Solar also considered existing utility and other corridors to the greatest extent feasible that is consistent with economic and engineering considerations, reliability of the electric system, and protection of the environment, in identifying the proposed Gen-Tie line route. *See* Wis. Stat. § 1.12(6).
- Transmission and Injection Capacity
 - One of the key criteria for selecting the most suitable Project Site for solar PV development is existing transmission and injection capacity. Point Beach Solar submitted a MISO interconnection request to study the current Point of Interconnection for the project in 2015. Point Beach Solar was a part of the February 2016 Definitive Planning Phase (DPP) Study Cycle for the East ATC region. The results of those studies over the course of two years established that the current POI for the Project is suitable from an injection capacity and cost perspective. The POI is also in close proximity to property already owned by the Applicant's affiliate and electric generation was intended to be located on the site. The POI location was selected in an effort to minimize the need to build a generation tie line greater than one mile in an effort to maintain economies of scale.

- Constructability – Topography
 - Another factor considered in site screening was constructability. Geotechnical studies and topographical surveys were conducted during the due diligence phase and no fatal flaws were identified by project consultants. It was also determined that minimal grading is expected to be required for the installation of the Project. This is an important factor as it relates to the amount of construction and installation costs.
- Environmental Factors – Site Suitability
 - Environmental factors including, but not limited to, wetlands, waterways, trees, critical habitat, threatened and endangered species, and hydric soils were considered during the site selection and Project design. The Project Site exhibits few of these environmental factors, and, impacts to those factors identified can be avoided or minimized by placement of the infrastructure.
- Cultural and Historic Resources – Site Suitability
 - Archaeological, cultural, and historical resources were considered during the site selection and Project design. The Project Site will not impact known archaeological, cultural, or historical resources.
- Development, Construction, and O&M Efficiencies
 - An affiliate of Point Beach Solar is developing a utility scale solar PV site adjacent (Two Creeks Solar, LLC (Two Creeks Solar)) to the Project, and, therefore, there are efficiencies and synergies in the development, construction, and O&M of the Project and Two Creeks Solar. These two projects have different MISO Interconnection Applications and POIs. The Point Beach Solar MISO Queue Number is J505 and the MISO Queue Number for Two Creeks Solar is J886.
- Customer and Landowner Feedback
 - Community and customer feedback were considered as part of the siting criteria for the Project. The Point Beach Nuclear Plant is considered to be a long time, good neighbor of the Town of Two Creeks and the broader community in Manitowoc County. Moreover, the Applicant has experienced eager landowner participation in association with the Project.

The potential use of existing Brownfield sites within the region was evaluated by Point Beach Solar. A comprehensive list of Brownfield sites was accessed from the U.S. Environmental Protection Agency (U.S. EPA) website, and 12 properties were identified

in Manitowoc County.⁴ The sizes of these properties were all less than twenty-five acres. One of the largest Brownfield sites in Wisconsin is a 369 acre site in Oneida, Wisconsin, and that site is not large enough to accommodate the Project. Point Beach Solar is not aware of a Brownfield location anywhere in Wisconsin that would meet the Project Site size and other criteria.

Given the land requirements of the proposed Project, it was concluded that no Brownfield sites would be suitable.

1.4.2.1.2 Provide a list of all project areas reviewed with weighted scores for each siting factor or characteristic used in the analysis.

The individual siting factors and characteristics referenced above were used for the selection of the Alternative Array. However, from a constructability and environmental factor standpoint, the Proposed Array is more suitable. The Alternative Array is not as efficient from a constructability standpoint because it would require more 34.5 kV underground collection, and potentially more road crossings, resulting in an increase of construction costs and a less efficient layout from a generation perspective. The Alternative Array potentially results in more impacts on a per acre basis to existing wetlands and environmental factors that can be avoided by selecting the Proposed Array.

1.4.2.2 Provide a narrative describing why the proposed project area was chosen.

The majority of the land comprising the Point Beach Solar project is owned by an affiliate of Point Beach Solar as a result of the series of transactions considered and approved by the Commission as identified in Section 1.4.2.1.1. Using Applicant's affiliate-owned property decreases the need for the use of adjoining properties and minimizes the use of farmland of non-affiliated property owners. Point Beach Solar and its affiliates continue to communicate and coordinate with the local landowners and licensees in the Project Site to minimize the impacts of the Project on farming operations.

Additionally, the proximity to multiple existing transmission options is a significant benefit to the Project Site. Point Beach Solar considered existing utility and other corridors to the greatest extent feasible that is consistent with economic and engineering considerations, reliability of the electric system, and protection of the environment in identifying the proposed Gen-Tie line route, and is utilizing an existing utility corridor consistent with Wis. Stat. § 1.12(6). In addition, there are potential development, construction, and operating synergies afforded to the Point Beach Solar Project given the proximity to the Point Beach Nuclear and Two Creeks Solar sites. Lastly, the physical site characteristics of the Project also factored into site selection. For example, there is minimal grading required to install solar PV panels, which minimizes land impacts. Additionally, to the

⁴ United States Environmental Protection Agency. February 2018. Cleanups in My Community. <https://www.epa.gov/cleanups/cleanups-my-community#map>

extent practical, the Project area avoids impacts to sensitive environmental features, and minimizes impacts to wetlands and waterways.

1.5 Site Selection

1.5.1 List the individual factors or characteristics used to select the proposed and alternate panel sites.

See Section 1.4.2 above for the individual factors or characteristics used to select the Proposed Array and the Alternative Array.

1.5.2 Provide information on how panel site characteristics and the type/s of panels chosen factored into the selection of the final panel sites.

As explained above, the siting characteristics mentioned in Section 1.4.2 were applied to select the Project Site. Point Beach Solar used an internal optimization tool to help determine an optimal site layout and configuration that optimizes generation using the land available after topographical and environmental factors are applied to the available land. Point Beach Solar's design team then developed the layout presented in this Application taking into account the space available, the topographical and environmental factors Point Beach Solar would like to avoid, and the size and efficiency of the modules. For example, after the Project Site was chosen, specific panel locations were selected to avoid environmental and cultural resources that were within the Project Site to minimize impacts to wetlands, waterways, forested areas, and cultural sites. This site characterization consideration is equally applicable to the solar panels identified in Section 1.1.1.3.

1.5.3 Setback distances

Point Beach Solar has voluntarily established a minimum setback distance of 20 feet for the Project. In some areas, the setback distance is greater.

1.5.3.1 Identify any sites where setback waivers are needed or have been executed.

No setback waivers are needed.

1.5.3.2 Status of easement agreements:

1.5.3.2.1 Identify all easement agreement that have been signed.

Point Beach Solar (or an affiliate) owns several parcels in fee simple where Project components are proposed to be located – comprising the majority of the Project Site. Please see attached map **Appendix A - 1.5.3.2 Land Status Agreements Map** regarding easements that have been signed and those that are pending agreements. Point Beach Solar anticipates having all of the easement agreements executed for the Project by the end of June 2019.

Appendix Y – Sample Agreement "Memorandum of Solar Lease and Easement Agreement" contains a sample contract for an easement. It should be noted that each actual easement will reflect the specific facts and circumstances of each parcel.

1.5.3.3 Good neighbor payments

Point Beach Solar does not anticipate the need for good neighbor payments, *i.e.*, payments made to nonparticipating landowners (pursuant to good neighbor agreements) as a way to mitigate potential concerns regarding the Project, because the majority of the landowners in the Project Site are affiliates of Point Beach Solar, WEPCO, or participating landowners in the Two Creeks Solar Project. As such, currently, no good-neighbor payments are contemplated. However, Point Beach Solar will evaluate the use of good neighbor payments on a case-by-case basis. If, there is a specific concern raised by a non-participating landowner, Point Beach Solar will work directly with that landowner to address their concerns where practicable.

In addition, Point Beach Solar has and will continue to invest in the community. Point Beach Solar is currently evaluating a number of sponsorship opportunities including the renovation of the Capitol Civic Center in Manitowoc and sponsoring the Earth Fair in Manitowoc. In January 2019, Point Beach Solar sponsored the FIRST Robotics Competition program at the Two Rivers High School.

1.6 Not Applicable to Point Beach Solar – Applies to utilities only (*Utility Cost*)

1.7 MISO and Project Life Span

1.7.1 MISO Market. Describe how, at the time of this filing, the proposed facility will be treated as an intermittent resource in the MISO market.

Point Beach Solar executed a LGIA with the MISO and ATC on January 22, 2018. The MISO queue position for the project is J505. The executed LGIA is provided in CONFIDENTIAL **Appendix B**.

1.7.2 Provide an estimate of the expected life span for the power plant.

The expected lifespan for the Project is 30 years based on facility design. Point Beach Solar believes the facility is capable of operating beyond 30 years based on the term of proposed lease agreements for an initial 30-year term with two 10-year extensions or five four-year extensions), the ability for the MISO LGIA to be automatically extended annually beyond the 30-year term, and the likely operational characteristics of the modules and inverters.

1.7.3 Describe how the facility will be decommissioned at the end of its life span.

At the end of the Project's useful life, Point Beach Solar will assess whether to cease operations and decommission the Project or to replace equipment and attempt to extend the

life of the Project. In general, the majority of decommissioned equipment and materials will be recycled. Materials that cannot be recycled will be disposed of at approved facilities.

At the end of the Project's useful life, the Project would cease operation. At that time, the facilities would be decommissioned and dismantled and the site restored to its pre-construction condition. Decommissioning activities will require a workforce of approximately six workers, and would take approximately eight months to complete. In general, decommissioning activities would include:

1. Dismantling and removal of all above ground equipment (solar panels, racking, transformers, Project Substation, etc.);
2. Excavation and removal of all above ground cabling;
3. Removal of posts;
4. Break-up and removal of concrete pads and foundations;
5. Pumping and break-up of any septic tank (backfilled with clean soil) and abandonment of leach field (if applicable);
6. Abandonment of underground utilities; and
7. Scarification of compacted areas within and contiguous to the solar plant facility (including but not limited to internal and external access roadways).

For the Gen-Tie line, telecommunication lines, and collector substation, dismantling would proceed according to four general stages: (1) dismantling and demolishing above ground structures; (2) removal of concrete foundations; (3) excavation and removal of soils and broken concrete from the site; and (4) surface contouring to return the disturbed areas to near-original conditions.

It is anticipated that the Point Beach Solar infrastructure will be decommissioned in the reverse order of installation activities:

1. Panels and fencing will be removed;
2. Supporting poles will be pulled out via an excavator and underground conductors will be removed;
3. Holes from removing materials will be filled with adjacent top soils;
4. After consultation with property owners, unwanted roads, ditches, and access aisles will be de-compacted via disking or harrowing; and
5. Excavated materials will be properly recycled or disposed of.

It is unlikely that a significant amount of earthwork will be required as the construction and operations of the Project calls for limited disturbance. Nevertheless, if necessary, Point Beach Solar will regrade and contour the area to establish proper storm water and sediment controls until the area is stabilized.

To facilitate a return to agricultural use following decommissioning, the land would be tilled to break the new vegetative growth, which will enhance the topsoil condition. Preliminary seeding and re-vegetation plans are provided in **CONFIDENTIAL Appendix H**. Accordingly, the soil condition on the site will be the same or in better condition than before the Project.

Once the Project is fully decommissioned, the property owner can sample the soils and, as needed, add fertilizer to match the crop(s) to be planted. As such, it is very likely the cropland will be returned to pre-construction yields.

Point Beach Solar will provide a formal decommissioning plan for the Project prior to the commencement of construction.

1.8 Required Permits and Approvals

1.8.1 Approvals and Permits.

Table 1.8.1 summarizes the permits and approvals that are required by federal, state, and local agencies for the Project. All required permits and approvals will be obtained prior to commencing construction activities.

Table 1.8.1: List of Potential Permits and Approvals

Regulatory Authority	Permit/Approval	Application Filing Date	Status of Application	Agency Contact (name and telephone)
<u>FEDERAL</u>				
U.S. Army Corps of Engineers (USACE)	Section 404 of the Clean Water Act	Expected to be non-reporting Nationwide Permit	No submittal required	Nick Domer (651) 290-5855
U.S. Fish and Wildlife Service (USFWS)	Coordination on Endangered Species Act, Bald and Golden Eagle Protection Act, and Migratory Bird Treaty Act	IPaC completed 12/10/2018 Coordination Letter sent 12/14/2018	USFWS comments received 3/20/2019	Peter Fasbender (952) 252-0092
<u>STATE</u>				
Public Service Commission of Wisconsin (PSCW)	CPCN for construction of large energy generation facility	May 2019	Pending	Jim Lepinski (608) 266-0478
Wisconsin Department of Transportation (WisDOT)	DT1504 State Truck Highway Connection permit for Driveway Permits	Q4 2019	Not yet submitted	Bob Fasick (920) 492-0148

Regulatory Authority	Permit/Approval	Application Filing Date	Status of Application	Agency Contact (name and telephone)
Wisconsin Department of Transportation (WisDOT)	WisDOT Permit 1553 - Permit to Construct, Operate and Maintain Utility Facilities on Highway Right-of-Way (ROW)	Q4 2019	Not yet submitted	Bob Fasick (920) 492-0148
Wisconsin Department of Natural Resources (WDNR)	Waterway General Permit Application	May 2019	Pending	Lindsay Tekler (608) 535-2602
Wisconsin Department of Natural Resources (WDNR)	Wetland General Permit Application	May 2019	Pending	Lindsay Tekler (608) 535-2602
Wisconsin Department of Natural Resources (WDNR)	Wisconsin Pollutant Discharge Elimination System (WPDES) Construction Site Stormwater Runoff General Permit	May 2019	Pending	Kim Gonzalez (608) 267-2759
Wisconsin Department of Natural Resources (WDNR)	Pit/Trench Dewatering General Permit	TBD	Not yet submitted	Nile A. Ostenso (608) 266-9239
Wisconsin Department of Natural Resources (WDNR)	Endangered Resources Review	December 14, 2018	Approved 12/20/2018 (ER# 18-975)	Stacy Rowe (608) 266-7012
Wisconsin Department of Natural Resources (WDNR)	Private Well Notification Number	Q3 2020	Not yet submitted	Deb Lyons-Roehl (608)-267-9350
Wisconsin State Historical Society (WHS)	Cultural Review	May 2019	Pending	Chip Brown (608) 264-6508

Regulatory Authority	Permit/Approval	Application Filing Date	Status of Application	Agency Contact (name and telephone)
Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP)	Agricultural Impacts Statement	Not Required (confirmed with DATCP 4/8/2019)	N/A	Marilyn Weiss (608) 224-4650
<u>LOCAL</u>				
Manitowoc County Highway Department	Utility Permit, Driveway Permit	September 2019	Not yet submitted	Daniel (Dan) Neuser (920)-683-4351
Town of Two Creeks Planning Commission	Driveway Permit, Work in Right-of-Way (ROW) permit, Oversize/Overweight Permit	September 2019	Not yet submitted	Chairperson Lee Engelbright (920) 755-4042

1.8.2 Correspondence with Permitting Agencies.

Appendices L-Q contain various copies of official correspondence between Point Beach Solar and applicable governmental agencies concerning the Project. Point Beach Solar will continue to provide the Commission with copies of applicable agency correspondence following the submittal of this Application.

2. Technical Description – Project Area, Panels, Panel Sites, and Ancillary Facilities

2.1 Estimated Solar Resource and Projected Energy Production

To evaluate the solar resource for the Project, data from Clean Power Research (CPR), Solar Anywhere, and on-site meteorological data was used to characterize the Global Horizontal Irradiance (GHI). The qualitative analysis included 20 years of satellite data from CPR and 22 months of good quality on-site measurements.

The CPR data shows a 20-year unadjusted annual mean estimate of 3.797 kilowatt hour (kWh)/m²/day. An on-site adjustment to the CPR satellite data gives an adjusted annual mean estimate of 3.762 kWh/m²/day for the 100 MW interconnect AC (114.92 MW installed AC), 143 MW DC tracking layout, corresponding to a range of net capacity factor (NCF) of 23.19% to 19.77% and a range of annual energy production of 203,120 megawatt hour (MWh) to 173,205 MWh depending on the final layout configuration and technology selected for the project.

The estimates of surface irradiation are generated from satellite observations of infrared and visible brightness and data from National Oceanic and Atmospheric Administration – National Centers for Environmental Prediction (NOAA-NCEP) atmospheric models, i.e., air temperature, water vapor, atmospheric optical depth, and snow depth. Ground measurements are used for validation purposes, but are not required as input data. This makes it possible to form estimates at all the “pixels” in the satellite imagery. CPR offers two sizes of pixels; lower resolution 10 km X 10 km and higher resolution 1 km X 1 km. The higher resolution pixel was used in the analysis.

A copy of the Solar Resource Assessment is provided in CONFIDENTIAL **Appendix F**.

2.2 Panel Type and Panel Characteristics

2.2.1 Identify the manufacturer and model of solar panel to be used.

There are two solar module technologies currently being considered for the Project:

1. Thin Film – these modules are the largest panels measuring 2.05 meters x 1.23 meters and generate approximately 440 watts each.
2. Mono-Crystalline – these modules measure approximately 1.99 meters x 0.99 meters and generate approximately 400 watts each.

The configuration of the panels will be in portrait orientation attached to the tracker system. For the mono-crystalline panels, there will be primarily 26 modules per string with 3 strings per tracker. For the thin film panels, there will be primarily six modules per string with 13 strings per tracker. In some locations, due to space limitations, there will be fewer strings per tracker. The quantity of panels for each inverter will be dictated by the MW/mega volt

amp (MVA) size of the final inverter design selected with larger inverters accommodating more modules.

2.2.2 Panel Delivery Date – Indicate whether or not this date is firm.

Panel deliveries are expected to occur continuously over the period beginning April 2021 and ending by August 2021.

2.2.3 Total number of panels required for project.

The number of panels will be approximately 320,000-370,000 depending on the final selection of panels used for the Project.

2.2.4 Technical Characteristics of Panels.

2.2.4.1 Panel Physical Dimensions

The panel dimensions will depend on the manufacturer and model selected. Thin film modules are expected to be approximately 2.05 meters x 1.23 meters. Crystalline modules are approximately 1.99 meters x 0.99 meters

2.2.5 Technical Characteristics of Panel Supports

2.2.5.1 Type of material used

The racking and tracker supports are made of galvanized and stainless steel.

2.2.5.2 Dimensions and number of sections required

The dimensions and quantity of trackers will depend on the panel manufacturer used and the final detailed design.

2.2.6 Scale drawings of panels including pad and transformer box.

See **Appendix C** – Panel Technical Data for representative panel dimensions and characteristics.

2.3 Construction Equipment and Delivery Vehicles

2.3.1 Types of construction equipment and delivery vehicles

The Project will consist of different equipment types depending on the phase of construction. The first phase, civil work and road building will consist of dozers, motor graders, and rollers. The pile driving phase will consist of pile drivers. The pile drivers used will be a Vermeer PD10 or similar; **Appendix D** contains a representative pile driver which will be utilized by Point Beach Solar. After pile driving, installation of racking and panels will be supported mainly by skid steers and telehandlers. For the substation, a large truck crane will be needed to set the Main Power Transformer (MPT) and other heavy equipment. For other substation components, small cranes, bucket trucks, and forklifts will be used to place equipment. For the Gen-Tie line, a wheeled or tracked drill will be used

to drill the hole for the pole placement and a wheeled or tracked crane will lift the poles into place. Other support equipment such as skid steers and forklifts will also be used.

2.3.2 Gross vehicle weight (loaded and unloaded) for all vehicles using local roads

Except for the MPT, delivery trucks will consist of legal load (80,000lb or less) over-the-road flatbed and box trucks. The Project Site will receive an average of approximately 7-10 box trucks (modules) a day throughout the module delivery period and 2-5 flatbed trucks a day (inverters, piles, racking, misc.) during the pile driving period. The Main MPT will weigh approximately 200,000lb and be transported via rail to the nearest railyard and then using special multi-axle trucking and state road permits, as necessary, to the Project Site.

2.3.3 For vehicles used for delivery (diagrams or drawings of vehicles are acceptable). Include:

2.3.3.1 Overall vehicle length

Except for the MPT, vehicles used for delivery will be standard over-the-road semi-trucks.

2.3.3.2 Turning radius

Turning radius will be the radius for standard over-the-road semi-trucks.

2.3.3.3 Minimum ground clearance

Minimum ground clearance will be the clearance for standard over-the-road semi-trucks.

2.3.3.4 Maximum slope tolerance

The routes to the Project Site are relatively flat, and, therefore, slope tolerance is not expected to be an issue.

2.3.4 Explain process for transportation, delivery and assembly of solar panels and associated equipment.

As construction progresses, the solar panels and other equipment will generally be delivered directly to the installation locations in a standard over the road truck. Fork lifts are used to unload pallets from the truck and place the pallets throughout the Project Site. Some equipment will be delivered to the laydown area and then distributed as needed.

2.3.5 Roads and Infrastructure.

Estimate the potential impacts of construction and delivery vehicles on the local roads. Provide the following:

2.3.5.1 Describe methods to be used to handle heavy or large loads on local roads.

The MPT is the only equipment that will require something other than standard over-the-road flatbed trailers and box trucks.

2.3.5.2 Probable routes for delivery of heavy and oversized equipment and materials.

The most likely route for equipment transport is from Interstate 43 via State Highway 147 and County Road V to State Highway 42. Once the equipment is near the Project the equipment will be delivered to the Project Site using Nuclear Road and Tapawingo Road.

2.3.5.3 Potential for road damage and any compensation for such damage.

Road damage during the construction phase of the Project is unlikely. Solar projects generally use legal limit loads. Preconstruction video road survey can be completed prior to construction commencement to document current conditions. Upon completion of the project deliveries a post construction video survey can be completed to document roads. Any damage caused by the construction of the Project will be repaired to as good as or better than initial condition.

2.3.5.4 Probable locations where local roads would need to be modified, expanded, or reinforced in order to accommodate delivery of equipment.

No modifications to local roads are expected.

2.3.5.5 Include an estimate of whether or not trees near or in road right-of-way (ROW) might need to be removed.

To the extent that tree clearing within or near the road ROW is necessary, clearing will be minimized to the extent practicable.

2.3.5.6 Provide an estimate of likely locations where local electric distribution lines will need to be disconnected in order to allow passage of equipment and materials

Local electric distribution lines will not need to be disconnected to allow for delivery of equipment and materials.

2.3.5.6.1 *Describe how residents will be notified before local power would be cut.*

Since local electric distribution lines will not need to be disconnected to allow for delivery of equipment and materials, there will be no cessation of local power, and, therefore, no need to notify customers of the loss of power.

2.3.5.6.2 *Estimate the typical duration of a power outage resulting from equipment or materials delivery.*

No power outages are required for the delivery of equipment and materials.

2.3.6 *Construction Traffic. Anticipated traffic congestion and how congestion will be managed, minimized or mitigated. Include:*

Local deliveries of equipment and material would likely use Nuclear Road and Tapawingo Road. During construction, between 200 and 300 construction workers would be expected to travel to and from the Project Site. Local traffic congestion may occur from Monday to Friday, twice a day, coinciding with workers arriving or leaving the site.

The site would receive between 2-5 flatbed trucks a day delivering inverters, supports, and racking during the construction period and approximately 7-10 box trucks a day delivering solar modules during the panel installation period. These various delivery trucks are expected to be road legal load flatbed and box trucks. The MPT would likely require a special delivery vehicle, and due to its weight (estimated at 200,000 lbs.) may require state road permits for its delivery.

Local routes to the Project Site will have construction signage notifying deliveries and workers to reduce traffic. Signage will be posted to inform the general public of the additional construction traffic.

2.3.6.1 *List of roads most likely to be affected by construction and materials delivery.*

Table 2.3.6.1: Affected Roads

Affected Roads
State Highway 42
State Highway 147
County Highway (CTH) V
Two Creeks Road
Tapawingo Road
Nuclear Road

Affected Roads
Lakeshore Rd

2.3.6.2 *Duration of typical traffic disturbance and the time of day disturbances are most likely to occur.*

As stated above, the noticeable traffic increase will occur twice a day during the work week, which is Monday through Friday, when construction workers are traveling to and from the Project Site. This increase will consist of the personal vehicles owned by the workers. Deliveries of equipment and material will generally be scheduled throughout the day versus during hours when residents are driving to and from work.

2.4 Other Project Facilities

2.4.1 *Site Foundations. Describe the type of foundation or foundations to be used. If more than one type of foundation may be needed describe each and identify under what circumstances each foundation type would be used.*

The Project will use driven pier foundations and concrete foundations. The inverters will likely be installed on driven pier foundations but could be placed on concrete foundations if required by soil and geotechnical conditions. The MPT will be installed on a concrete foundation.

2.4.1.1 *Dimensions, surface area and depth required for each foundation.*

Foundation dimensions will be determined in the detailed engineering phase; generally, the largest foundation will be the main transformer foundation (MTF) which will be approximately 50 feet x 30 feet. The piers will be from 5 feet to 10 feet deep.

2.4.1.2 *Amount of soil excavated for each foundation type.*

For driven pier foundations, no excavation is required. For the concrete foundations, soil excavation quantities will be determined in the detailed engineering phase.

2.4.1.3 *Describe how excavated soils will be handled including disposal of excess soil.*

It is not anticipated that there will be any excess soil. Should excess/excavated soil exist, it will only be spread within the Project Site on property subject to and in accordance with terms of the solar lease agreements with landowners. The excavated soils will be graded back in after construction and will not be graded into any cropland, pasture, or wetland areas.

2.4.1.4 *Materials to be used for the foundation.***2.4.1.4.1 *Approximate quantity and type of concrete required for typical foundation.***

Subject to detailed engineering, foundations will be standard reinforced concrete with compressive strength less than 5,000 pounds per square inch.

2.4.1.4.2 *Materials required for reinforcement.*

The concrete will be reinforced with rebar.

2.4.1.5 *Provide technical drawings of each foundation type to be used showing foundation dimensions.*

See **Appendix X** for technical drawing of a typical main transformer foundation.

2.4.2 *Site Construction Area.*

The current design consists of 34 AC blocks. The number of rows varies per block but is anticipated to be approximately 96-146 rows. Each block includes one inverter and is connected to the associated PV panels. The rows of panels are approximately 6.6 feet wide (East-West) and 260 feet long (North-South). These dimensions will change somewhat once the final equipment is selected and detailed engineering is complete.

2.4.2.1 *Lay-down areas*

There are two main lay-down/staging areas proposed for the Project. The lay-down/staging areas are located off of Nuclear Road west of Highway 42 and off of Tapawingo Road east of Highway 42. The combined areas will total approximately 13 acres. The lay-down/staging areas will be restored to pre-construction state after construction is completed.

2.4.2.2 *Parking area*

Construction worker parking will be included in the lay-down/staging area.

Point Beach Solar will strip the top soil from the laydown area prior to compacting or installing aggregate materials. The top soil will be stockpiled and stored near the laydown/staging location and will have temporary erosion control measures per the project specific Stormwater Pollution Prevention Plan (SWPPP).

Upon completion of Project construction, aggregate surfaces will be removed to a depth where clean aggregate without soil mixing can be retrieved. This aggregate will be applied throughout the site on access roads as a final top layer.

Once the aggregate is removed, the yard will use deep disking construction equipment to de-compact the subgrade. Once the subgrade has been appropriately de-compacted, the top soil will be evenly spread over the yard and standard agriculture equipment can be used to prepare the soil for a seed bed. Crop yields are expected to return to preconstruction levels. Any required compensation would be addressed on an individual land owner basis in accordance with the respective lease and easement agreement.

In the unlikely event that pre-construction crop-yields are not restored, any compensation will be governed by the respective landowner lease agreement.

2.4.2.3 Provide a scale drawing showing the general construction setup for the sites.

The general construction setup will have construction trailers, employee parking, and some equipment storage located at the laydown yard/staging area. The initial phase of construction will consist of grading, trenching, and site road construction throughout the property. Depending on the final work sequence developed by the construction contractor, some areas will move into the next phase of construction including pile driving, racking installation, and panel installation. During this phase, equipment will be staged throughout the property as it is delivered to the Project Site. This allows for more efficient work processes and minimizes down time. A detailed construction setup will be determined by the construction contractor closer to the start of construction.

2.4.3 Access Roads

2.4.3.1 Provide the total number of miles required for access roads.

Internal Project Site access roads are expected to be approximately five miles in total length. The internal access roads will be located within the secured fenced areas and will not be available for use by landowners.

2.4.3.2 Describe materials to be used and methods for construction of access roads including road bed depth.

Construction of the internal site roads begins by removing the topsoil and organic material. Then the subgrade is compacted and constructed according to civil design requirements. A layer of road base is added and compacted.

Road aggregate or fill will be a local pit run aggregate material that meets WisDOT specifications. Upon completion of detailed engineering, the aggregate specifications will be available for construction quality assurance.

2.4.3.3 *Specify the required width of access roads. Fully describe any differences between final road size and that required during construction.*

Internal Project Site roads are specified to be 12-16 feet wide during construction and for final operations. Twenty-foot wide temporary construction access roads are planned at four locations. The temporary access will be restored to pre-construction state after construction is completed.

2.4.3.4 *Describe any site access control (i.e. fences or gates)*

All Project areas will be fenced in compliance with the National Electric Code (NEC).

Point Beach Solar will review several fencing options, including “deer fencing,” to determine if such fencing can be designed to provide adequate security in compliance with all codes, including North American Electric Reliability Council (NERC) Critical Infrastructure Protection (CIP) requirements. If the applicable requirements can be met, Point Beach Solar may utilize “deer fencing” or equivalent. However, for public safety reasons, for the substation site, Point Beach Solar will utilize a seven-foot chain link fence that includes one foot of barbed wire on top. The high voltages and resulting potential hazards associated with the substation necessitate additional barriers to entry provided by the barbed wire. Each fenced area will have at least one entrance gate with access to a public road. The access roads will not be available for use by landowners.

2.4.4 *Transportation.*

2.4.4.1 *Explain why existing roads and access roads cannot be used and why*

To get to the Project Site, existing roads will be used. Once on site, new access roads will be required since the property being used is agricultural land and does not include roads. New access roads are needed to align with the Project’s design and placement of equipment.

2.4.4.2 *Description of materials to be used and methods for construction of new access roads*

Construction of the internal Project Site roads begins by removing the topsoil and organic material. Then the subgrade is compacted and constructed per the civil design requirements. A layer of road base is added and compacted. Road aggregate or fill will be a local pit run aggregate material that meets WisDOT specifications. Upon completion of detailed engineering, the aggregate specifications will be available for construction quality assurance.

2.4.4.3 *Discuss when and how transportation paths would be removed and land recovered.*

Removal of transportation paths is not needed since the internal site roads are specified to be 16 feet wide during construction and for final operations.

2.4.5. General Construction Areas

2.4.5.1 Identify size and location of lay-down areas outside of those found at the sites and any other areas used for material storage.

There are no lay-down areas planned outside of the Project Site.

2.4.5.2 Identify size and location of construction parking areas.

The construction laydown/staging area will also serve as a construction parking area.

2.4.5.3 Describe the expected use of these areas after project completion.

Upon completion of the Project, the lay-down/parking areas will be reclaimed. Aggregate material will be removed and stockpiled and the soils will be seeded and returned to a native vegetated state.

2.4.5.4 Provide a list of all hazardous chemicals to be used on site during construction and operation (including liquid fuel).

Expected hazardous chemicals include the following:

- Diesel
- Gasoline
- Oil
- Grease
- Spray Paint
- Galvanization paint

2.4.5.5 Discuss spill containment and cleanup measures including the Spill Prevention, Control, and Countermeasures (SPCC) and Risk Management planning for the chemicals proposed.

Point Beach Solar will develop and implement a Spill Prevention, Control, and Countermeasures (SPCC) plan to outline the procedures and preventative measures for handling on-site chemicals during construction and operation. The SPCC plan will identify the following:

- Typical fuels, chemicals, lubricants, and paints to be used or stored in Project areas;
- Methods and locations of storage;
- Locations designated for lubrications and refueling;
- Preventative measures to be used during refueling;
- Mitigation measures to be employed in the event of a spill;
- Locations of construction spill kits and contents of kits (gloves, boom, sorbents, barrier material, etc.);

- Emergency notification procedures and forms;
- Contact information for individuals requiring notification if a spill should occur; and
- Procedures for handling contaminated and spill response materials.

The SPCC plan will be maintained on-site during construction and operation and will meet all agency requirements.

2.4.6 Transmission and Distribution Interconnection

2.4.6.1 Describe any transmission or distribution grid interconnection requirement.

The Transmission interconnection requirements are discussed in the executed LGIA among Point Beach Solar, ATC and MISO. The LGIA can be found in CONFIDENTIAL **Appendix B**. A separate transmission CPCN is not required for this project because the Gen-Tie line is less than one mile in length.

2.4.6.2 Describe all communications and agreements, official or otherwise, with the transmission or distribution owner.

Point Beach Solar communicates with ATC on a monthly basis regarding the J505 point of interconnection and the general status of the Project. ATC and Point Beach Solar project teams coordinate timing of permits, engineering and construction plans, construction timelines, and back-feed power dates on a monthly basis. ATC and Point Beach Solar informally exchange email information regarding the Point Beach Solar POI on a weekly basis. In January, ATC and Point Beach Solar exchanged information regarding the proposed general arrangement of the substation and extent of the substation pad. In February, Point Beach Solar provided details on the pole materials and weights to ATC. In March, Point Beach Solar and ATC discussed updating the milestone schedules in the LGIA. In April, Point Beach Solar had ATC review relevant sections of this CPCN application.

Point Beach Solar, ATC, and MISO executed an LGIA on January 22, 2018.

Point Beach Solar and WEPCO executed a Grant of Substation, Transmission Line, and Access Easements on January 9, 2018 that expressly anticipates that all of Point Beach Solar's right, title, and interest in and to this Agreement shall be assigned to ATC upon the receipt of all approvals from governmental authorities and such other permits or authorizations as may be required for the Point Beach Solar Project.

The executed confidential LGIA can be found in CONFIDENTIAL **Appendix B**.

2.4.7 Collector Circuits

2.4.7.1 Total number of miles of collector circuits required – separated by circuit type (overhead vs. underground).

Underground collector circuits are proposed. Underground collector circuits are an industry standard method to route the collection cables while eliminating interference with other above ground infrastructure on the Project Site. In addition, overhead lines have a shading impact on the PV panels resulting in a negative impact on generation.

The total length of AC collection installed for the Project will be approximately 12 miles (63,638 ft.). This includes all AC collection lines within the PV array connecting to each of the inverters and eventually combining into six circuits running to the collector substation. The distance from the northern edge of the PV array to the collector substation is approximately 0.4 miles. With six feeders, the total length of AC collection between the PV array and the collector substation is 12 miles. See table below for the length of each circuit.

Table 2.4.7: Collector Circuit Lengths

Circuit No.	Length (ft.)
1A	13,682
1B	10,320
2A	15,126
2B	8,764
3A	8,961
3B	6,875
Total	63,638

2.4.7.2 Specify the collector circuit voltage to be used.

The collector circuit voltage will be 34.5kV. The distance from the northern edge of the PV arrays to the project collector substation is approximately 0.4 miles and AC power loss over that distance is estimated to be approximately 0.4%.

2.4.7.3 Transformer type, location, and physical size of transformer pad at each site.

The inverter pad mount transformers will be selected as part of a competitive bid process closer to the detailed engineering phase. The transformers are typically part of a skid assembly with the inverter(s) and the assembly is mounted on a driven pier or concrete foundation.

2.4.7.4 *Underground Collector Circuits*

2.4.7.4.1 *Conductor to be used*

The preliminary design assumes the conductor will be aluminum. Insulation: 35kV TRXLPE, 100% insulation, (1/6, 1/3 and 2/3 concentric neutral depending on wire size), PVC Jacket overall. Cables are MV-105. Final specifications will be determined during the detailed engineering phase.

2.4.7.4.2 *Burial depth and width of trench*

Typical Burial Depth: 36-48"

1. Single feeder trench width ~12-18".
2. Two feeder trench, spacing is 3', width ~ 3'6".
3. Six feeder trench, spacing is 3', width ~ 15-16'.

The sequence is as follows: (1) the trench is typically dug with a backhoe; (2) topsoil removed for trenching purposes will be segregated from the trench spoil; (3) the trench will be dug to a depth of approximately 48 inches with width depending upon the number of feeder circuits per trench; (4) the cables will be direct buried and the bottom of each trench will be lined with clean fill to surround the AC or DC collection lines and the remainder of the trench will be back-filled with native soil and appropriately compacted; and, (5) during backfilling, subsoil material will be replaced first, followed by topsoil.

2.4.7.4.3 *Describe trench and how lines would be laid (direct buried, conduit etc.) Provide scale drawing of underground circuit.*

Trenches will be approximately 36-48" deep and the width will vary depending on the number of circuits per trench. The feeder cables will be direct buried and comply with the applicable code. See **Appendix W** for representative drawings and further details on the feeder trenches. **Appendix A – Figure 2** displays the location of the proposed bore pits, associated required temporary workspace, and symbols representing the two installation methods (i.e., trench versus bore).

2.4.7.5 *Overhead Collector Circuits*

2.4.7.5.1 *Size of pole to be used.*

The preliminary design assumes the Project will use underground collector circuits, and, therefore, overhead collection lines and poles is not anticipated. Any overhead circuits would be used in the unlikely case of unanticipated obstructions which do not allow for trenching or horizontal directional drilling.

1.4.7.5.2 Engineering drawing of structure to be used.

Because overhead circuits are not anticipated, no structure drawings have been provided.

2.4.8 Construction Site Lighting

Lighting equipment used during construction will consist of temporary light plants. The light plants are connected to a trailer and have generators to allow them to be transported around the construction site. The laydown area and parking area may have lights mounted to poles to support construction during non-daylight hours.

2.4.9 Operation and Maintenance

During operation, Point Beach Solar and/or its contractors will perform all service and required preventative maintenance of all Project equipment including the substation in accordance with all applicable federal, state, and local laws/ordinances and regulations. This will include providing 24-hour remote monitoring and diagnostic analysis of site conditions from the ROCC/ERCC (Renewable Operations and Control Center/Energy Resources Control Center) in Juno Beach, Florida.

With respect to the cleaning of the solar panels, given the amount of precipitation, including frozen precipitation in the Project Site, Point Beach Solar does not anticipate the need to perform cleaning annually. However, Point Beach Solar will monitor panel cleanliness on an on-going basis. If it becomes necessary to wash panels, it is anticipated that washing would not be required more than once in a 12-month period. The total requirement per wash will be approximately 3 acre-ft. of water. Point Beach Solar expects to utilize city water and does not anticipate utilizing chemicals for panel washing.

2.5 Substation

2.5.1 A complete electrical description of required substation facilities including a list of transformers, busses, and any interconnection facilities required.

The Project will include a new collector substation with the following components:

- 34.5kV feeder risers;
- 34.5kV bus structure;
- Auxiliary transformer;
- 34.5kV main switch;
- 138/34.5kV main transformer;
- 138kV circuit breaker;
- 138kV dead-end structure with main switch;
- 138kV transmission lines leaving the substation;
- Shield wires;
- Control building; and
- Perimeter security fence with access gate.

The Project will include a new interconnection switchyard with the following components:

- Auxiliary transformer;
- 138kV circuit breakers with switches;
- 138kV dead-end structures with switches;
- 138kV transmission lines entering and leaving the substation;
- Static masts and shield wires;
- Control building; and
- Perimeter security fence with access gate.

Also see **Appendix B** for preliminary Project drawings and representative Project components.

2.5.2 Indicate the size (in acres) of the land purchase required for the new substation or substation expansion.

The collector substation and the interconnection switchyard will each use approximately 2 acres.

2.5.3 Indicate the actual size of the substation or substation addition in square feet, the dimensions of the proposed substation facilities, and the orientation of the substation within the purchase parcel.

The preliminary design for the collector substation measures approximately 117 feet x 206 feet. The collector substation is oriented for the medium voltage circuits to approach from the east and the high voltage lines to exit to the west. See **Appendix B** for a preliminary general arrangement drawing of the substation.

The preliminary design for the interconnection switchyard measures approximately 210 feet x 300 feet. The switchyard is oriented for the 138kV transmission lines to enter and leave the switchyard from the west and the Gen-Tie line to approach from the east. See **Appendix B** for a preliminary general arrangement drawing of the switchyard.

2.5.4 Identify current land ownership and whether applicant has control of property or whether or not an option to buy has been signed.

The Project collector substation will be located on land owned by FPL Energy Point Beach, LLC. The switchyard will be located on land leased from WEPCO contemplated in an easement between WEPCO and Point Beach Solar that was executed in January 2018.

2.5.5 Describe substation construction procedures (in sequence as they will occur) including erosion control practices (see Section 3.1).

Best Management Practices (BMPs), such as temporary seeding and silt fences, will be implemented prior to commencement of civil work. Once BMPs are implemented, grading and access construction will commence along with the excavation for the dry pond. Civil

grading will be required to bring the pad to the engineered elevation. After the pad is complete, foundation work will commence. The foundations will consist of both poured piers and poured in place slabs. Grounding and underground conduit trenching will be constructed at the same time as the foundations. Once foundations, grounding, and conduits are completed the installation of steel structures will commence. Once steel is erected, specialty equipment will be set and wired.

2.6 Operations and Maintenance Building

In response to Section 2.6.1 through 2.6.6 of the Application Filing Requirements, including all subparts, Point Beach Solar will not construct an Operations and Maintenance Building as part of the Project.

3. Construction Sequence and Workforce

3.1 Construction Sequence

3.1.1. Provide the construction schedule for the proposed project. Include a timeline showing construction activities from beginning of construction to in-service. Identify all critical path items.

Table 3.1: Estimated Project Construction Schedule

Activity	Estimated Start	Estimated Completion
Construction Begins	August 2020	
Mobilization	August 2020	August 2020
Site Preparation and Road Construction	August 2020	September 2020
Drive Posts	October 2020	May 2021
Install Racking	April 2021	July 2021
Install Inverters	April 2021	June 2021
Install Modules	April 2021	August 2021
Construct Project Substation	April 2021	August 2021
Construct Gen-Tie Line	May 2021	July 2021
Commissioning	August 2021	September 2021
In-Service Date		October 2021

The solar panels will be delivered on a rolling basis beginning April 2021 and ending August 2021. Panel installation and other construction activities will simultaneously occur during this timeframe. It is anticipated that only the final panels will be delivered in August 2021. All other Project infrastructure will be in place by September 2021. The installation

of the final panels will be completed in August 2021 with commercial operation by the end of October 2021.

3.1.2. Provide a description of the staging and construction sequence required for building the proposed project. Include the delivery of materials.

Some materials will be stored in the laydown yard, but most materials will be delivered directly to the solar field and staged near the installation location.

3.1.3. Estimate of time required to complete construction.

The construction timeline will be finalized after an engineering, procurement, and construction contractor is hired. The construction timeline will be dependent on winter weather conditions and the ability to work through the winter months. Total time to complete construction is estimated to be approximately 14 months.

3.2 Workforce

3.2.1 Provide information on the workforce size and skills required for plant construction and operation.

During construction the work force will consist of equipment operators, laborers, and management personnel. The equipment operators will operate civil equipment, pile drivers, cranes, and material handling equipment, such as skid steers. The majority of the personnel required to construct a solar project are laborers that install racking systems and place modules. Approximately 200-300 workers will be needed to complete the Project. The plant operators will have specific training that correlates with running a PV plant and a high voltage substation.

Point Beach Solar also will utilize an internal environmental construction compliance program that ensures compliance with all applicable environmental permits, plans, and regulations. An environmental monitor will conduct on-going on-site inspections during construction to ensure all employees are environmentally aware and ensuring compliance throughout construction. Moreover, Point Beach Solar will implement a Construction Compliance Program (CCP) consisting of environmental training, regularly scheduled inspections, and tools such as permit matrices to ensure all environmental laws and conditions are met. Under the CCP the environmental lead will provide environmental training to all managers and the foreman prior to construction. Thereafter, the contractor will ensure any employee who works at the site is trained in accordance with the CCP. During construction the environmental lead will conduct weekly meetings at the site as well as regular inspections to ensure all environmental regulations and conditions are being implemented.

3.2.2 Estimate how much of the expected workforce will come from local sources.

Approximately 70 percent of the workforce is expected to come from local sources, depending on the labor market and their availability at the time of construction.

4. Project Maps, Aerial Photography, Photo Simulations, and GIS Shapefiles

4.1 Project Area Maps

A set of Project maps is provided in **Appendix A**. The maps show the Project Site and other Project data on aerial photographs and include environmental, parcel, land use, and existing utility/infrastructure information. Also included is environmental information required to support WDNR's review. Point Beach Solar will be providing electronic formats of the maps Geographic Information Systems (GIS) data files separately on discs to the Commission in **Appendix I**.

At the request the request of PSCW staff, Point Beach Solar is providing a map depicting the locations of the proposed Project with the Two Creeks Solar Project. This map is provided as **Appendix A - Point Beach Solar and Two Creeks Solar Visual Comparison**.

4.1.1 General Project Area Map.

Please see maps labeled **Appendix A - 4.1.1 General Project Area Map**. Both maps include the entire Project Study Area and reach at least 1 mile beyond the Project Study Area boundary and are of approximate scale 1:4800. The maps show the boundaries of the Project Site, the Proposed Array, the Alternative Array (symbolized differently and identified by number), any new collector substation facilities, and access roads.

4.1.2 Detailed Project Area Map.

Please see maps labeled **Appendix A - 4.1.2 Detailed Project Area Map**. The scale for this map is larger than that of the general Project map so additional detail is clearly visible.

4.1.3 Topographic Maps

Please see maps labeled **Appendix A - 4.1.3 Topographic Map**. The maps include the Project Study Area boundary, the Proposed Array, the Alternative Array, substation facilities, collector circuits, and access roads.

4.1.4.1 and 4.1.4.2 Substation

Please see maps labeled **Appendix A - 4.1.4.1 Detailed Substation Map**. The maps include the location dimensions and layout the new substation, recent aerial photos of the substation site, and the location of all power lines entering and leaving the substation. Please see **Appendix B** for a preliminary single line drawing of the substation that shows an engineering diagram of the substation and substation equipment including existing interconnection facilities.

4.1.6 Natural Resources and Land Use/Ownership Maps

4.1.6.1 Wetland maps.

Appendix A - 4.1.6.1 Wetland Maps is a figure displaying wetlands within two miles of the Project Study Area. This figure illustrates the Wisconsin Wetland Inventory (WWI) data acquired from the WDNR.

Additional detail on field and desktop delineated wetlands and waterways can be found within **Appendix A** where a large-scale mapbook of the Wetland Study Area, facilities, wetlands, and waterways is provided on a current aerial background (**Appendix A - Figure 2**). The mapping extent of field and desktop delineated wetlands is only within the Wetland Study Area boundary near areas considered for the proposed facilities. Properties owned by non-participating land owners were not investigated; therefore, actual wetlands may continue beyond the edges of mapped features.

4.1.6.2 Land ownership maps, minimum scale 1:10,000 (map extent to 1.0 mile from the project boundary).

Appendix A - 4.1.6.2 Land Ownership Map shows the following features: current parcel boundaries and landowners, roads, municipal boundaries, Project Study Area boundary, Proposed Array, Alternative Array, access roads, collector circuits, and topographic contours.

4.1.6.3 Public lands.

Appendix A - 4.1.6.3 Public Lands Map is a figure displaying public and managed lands within two miles of the Project Study Area. This figure illustrates public land data including national, state, and county forests; parks, trails, and other managed lands as identified through the WDNR, USFWS, and U.S. Geological Survey (USGS) Gap Analysis data. Additionally, **Appendix A - 4.1.6.3b Public Lands (20 miles) Map** has been provided to illustrate similar data, as well as wetland data to a 20-mile extent. The intent of this map is to provide an overview of the region surrounding the Project.

4.1.6.4 Land cover.

Appendix A - 4.1.6.4 Land Cover Map is a figure displaying the land cover types within the Project Study Area. Section 5.3 and Tables 5.3.2 and 5.3.3 provide summaries of the land cover types and those that will be impacted by Project construction or facilities.

4.1.6.5 Flood Insurance Rate maps (FIRMs) (within the project boundary). Provide flood insurance maps if the site is within one-half mile of a floodplain.

Appendix A - 4.1.6.5 Flood Map is a figure displaying the digital flood information within two miles of the Project Study Area. The figure displays digital Flood Insurance Rate

Maps (FIRMs) data acquired from the Federal Emergency Management Agency (FEMA) website.

4.1.6.6 Soil Survey maps (within the project boundary)

Appendix A - 4.1.6.6 Soils Map is a figure displaying the Project Study Area. It illustrates soil information acquired from the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Soil Survey Geographic Database.

4.1.6.7 Bedrock maps (within the project boundary). Map showing depth to bedrock for the entire project area.

Appendix A - 4.1.6.7 Bedrock Map presents the bedrock geological information gathered for the Project Study Area. The information is from state/regional-scale studies and not from geotechnical data. As part of the geotechnical study performed for the Project Study Area, soil borings were conducted to a depth of 20 feet. No bedrock was encountered and is not expected to be a project constraint.

4.1.7 Community Maps

Please see map labeled **Appendix A - 4.1.7.1 Zoning Map**. The map includes the Project Study Area showing existing zoning out to 0.5 miles beyond the boundaries of the Project Study Area.

Please see map labeled **Appendix A - 4.1.7.2 Sensitive Areas Map**. The map includes the Project Study Area showing proximity to schools, day care centers, hospitals, and nursing homes up to 0.5 mile from the substation site. Because no sensitive areas were identified within 0.5 mile of the proposed substation, no features are contained on the map.

Please see map labeled **Appendix A - 4.1.7.3 Airport Maps**. The map includes all runways from public airports within 10 miles of the Project Study Area boundary, all runways for private airports within 10 miles of the Project Study Area boundary, the Proposed Array, and the Alternative Array. There are no landing strips inside and within two miles of the proposed Project Study Area boundary.

4.1.8 Communication Infrastructure

Please see map labeled **Appendix A - 4.1.8.1 Communications Map**. The map identifies radio, microwave towers, and any NEXRAD or Doppler weather radar installations within a 50-mile radius of the Project Study Area.

4.2 GIS Shapefiles – Provide GIS shapefiles and attributes as listed below.

All Project maps were created using ESRI ArcGIS Version 10.4 or higher. A spreadsheet of each GIS file, including the description of the data, the data source, and the date of when the data was generated or collected is provided as part of the GIS data disc, **Appendix I – GIS Data**. GIS shapefiles provided on the data disc include all features described in Table 4.2 located in **Appendix I – GIS Data**.

4.3 Topography – *Raster files of topographic features within the project area and surrounding landscape (10-mile radius of the project area).*

See **Appendix A - 4.3 Project Topographic Maps** for site topographic maps. Raster files have been provided in **Appendix I – GIS Data**.

4.4 Photo Simulations

Existing aesthetic conditions of the Project Study Area and its vicinity were documented with photographs taken during March 2019. Prior to commencing the photo simulations for the Project, Point Beach Solar consulted with Commission staff in February and March 2019 on methods for acquiring site photographs. A subset of photographs collected during a site visit will serve as baseline images for the creation of visual simulations. The simulations will show rendered views that include the proposed solar arrays and collector substation as proposed in engineering and plan documents. The Visual Simulation Study is provided in **Appendix K – Photo Simulation Study**.

5. Natural and Community Resources, Description and Potential Impacts

5.1 Site Geology

5.1.1 Describe the geology of the project area.

The majority of Manitowoc County is covered with 10 to 300 feet of Quaternary aged gravel, sand, silt, and clay deposited as part of the Lake Michigan lobe during the Wisconsin Glaciation. Underlying these deposits is bedrock consisting of Silurian aged dolomitic limestone followed by Ordovician aged shale and dolomite of the Maquoketa Formation, then dolomite, limestone, and shale of the Sinipee Group. Older sedimentary rock underlies these formations. The bedrock surface tends to dip eastward towards Lake Michigan at a rate of 30 to 40 feet per mile. Groundwater throughout Manitowoc County is generally present in Quaternary aged sediments with most potable water supplies drawn from the upper Silurian aged dolomite or deeper sedimentary formations.

The Project Study Area is located in northeastern Manitowoc County and is relatively flat with gradual topographic changes. The majority of land cover and land use in the Project Study Area is agricultural production; however, several rural residential areas exist. The Project Study Area is present within the Lake Michigan Lacustrine Clay Plain ecoregion. This ecoregion supports diverse vegetation types and agriculture, and is characterized by red calcareous clay soil, lacustrine and till deposits, and a flat plain. Fertile soils with a variety of crops are present in the Project Study Area. Native vegetation of this region is beech, maple, basswood, and oak forests. The Project Study Area also contains numerous surface waters and wetlands; some of which are emergent and forested.

5.1.2 Geotechnical Report on Soil Conditions

5.1.2.1 Provide a summary of conclusions from any geotechnical report or evaluation of soils in the project area including:

- ***Results of soil borings including a review of soil bearing capacity and soil settlement potential.***
- ***Identify any soil conditions related to site geology that might create circumstances requiring special methods or management during construction.***

A preliminary geotechnical engineering report was prepared by Terracon Consultants Inc. The subsurface profile described in the report is the top 0.5-1.5 feet of soil are topsoil/root zone/clayey. Below that, soils are lean clay and silty clay. Based on the soil boring results, karst features, solution features, dispersive soils, collapsible soils, or expansive soils are not expected to be encountered. See **Appendix L** for the complete report.

5.1.2.2 Depth to bedrock

- ***Identify any sites where foundation construction must be modified because of the presence of bedrock.***

Bedrock was not encountered during geotechnical soil borings to a depth of 20 feet and is not expected to be a constraint.

- ***Describe construction methods and foundation issues associated with situations where bedrock formations are near the surface.***

No construction issues are expected due to bedrock formations.

- ***Discuss the likelihood or potential that construction on bedrock formations may negatively impact private wells within two miles of solar array sites.***

Construction on bedrock formations is not expected.

5.2 Topography

5.2.1 Describe the general topography of the project area.

General topography of the Project Study Area is relatively flat with gradual topographic changes and some rolling contours. The majority of land cover and land use in the Project Study Area is agricultural production; however, several rural residential areas exist.

5.2.2 Describe expected changes to site topography due to grading activities.

Minimal grading is planned for the site.

5.3 Land Cover

Land cover within the Project Study Area was identified using aerial photography and on-site field observations completed in July, August and September 2018. Land cover was digitized into a GIS layer to quantify the area by category with the land cover categories corresponding to those recommended by Commission guidance. The polygons of each land cover category were then clipped with Project Study Area boundaries and acreages for each resulting polygon were quantified with GIS software. The resulting acreages were summed by land cover category for the Project Study Area.

Table 5.3.3 provides an estimate of the land cover area that will be impacted by the Project. Alternative Array impacts are presented separately in the table. Land cover types are described in the following sections and include:

- Agricultural Land Use
 - Row Crops and Traditional Crops
 - Specialty Crops
- Non-Agriculture Upland
 - Grasslands/Pasture/Fallow Field
 - Forested Uplands
- Wetland/Waterbodies
 - Wooded Wetland
 - Non-Wooded Wetland
 - Wet Meadow
 - Shrub-Carr
 - Shallow Marsh
 - Farmed
 - Open Water
- Developed Land
 - Developed/Urban

5.3.1 Vegetative Communities in the Project Study Area.

Field habitat assessments were conducted in conjunction with wetland and waterway surveys in August and September 2018. The vegetative communities in the Project Study Area are dominated by actively tilled agricultural crops, grassy swales, and areas of trees along field edges.

5.3.1.1 *Agricultural*

Agricultural areas identified in the Project Study Area consist of actively farmed row crops including corn, soy beans, alfalfa, and winter wheat. No specialty crops were identified within the Project Study Area.

5.3.1.2 *Non-Agricultural Upland*

Upland grasslands were dominated by American elm (*Ulmus americana*), Kentucky bluegrass (*Poa pratensis*), common wood sedge (*Carex blanda*), common plantain

(*Plantago major*), red-osier dogwood (*Cornus alba*), sweet clover (*Melilotus officinalis*), Canada goldenrod (*Solidago canadensis*), barnyard grass (*Echinochloa crus-galli*), witchgrass (*Panicum capillare*), sandbar willow (*Salix interior*), Queen Anne's-lace (*Daucus carota*), reed canary grass (*Phalaris arundinacea*), quackgrass (*Elymus repens*), and smooth brome (*Bromus inermis*).

Upland forests were dominated by chokecherry (*Prunus virginiana*), dames rocket (*Hesperis matronalis*), stinging nettle (*Urtica dioica*), red-osier dogwood, box-elder (*Acer negundo*), black cherry (*Prunus serotina*), American elm and green ash (*Fraxinus pennsylvanica*).

5.3.1.3 Wetlands

Wetlands identified in the Project Study Area included hardwood swamp, wet meadow, shrub-carr, shallow marsh, and farmed wetlands.

Typical hardwood swamp vegetation included green ash, black ash (*Fraxinus nigra*), American elm, black willow (*Salix nigra*), and box-elder in the overstory, with dominant shrub/ground layer species including lake sedge (*Carex lacustris*), bristly buttercup (*Ranunculus pensylvanicus*), giant goldenrod (*Solidago gigantea*), nannyberry (*Viburnum lentago*), red-osier dogwood, reed canary grass, sandbar willow, tussock sedge (*Carex stricta*), and devil's beggartick (*Bidens frondosa*).

Typical wet meadow vegetation included reed canary grass, narrow-leaf cattail (*Typha angustifolia*), common plantain, biennial wormwood (*Artemisia biennis*), box-elder, blunt spikerush (*Eleocharis obtusa*), Canada bluejoint (*Calamagrostis canadensis*), red-osier dogwood, tussock sedge, eastern woodland sedge (*Carex blanda*), barnyard grass, fall panicgrass (*Panicum dichotomiflorum*), sandbar willow, common reed (*Phragmites australis*), and peachleaf willow (*Salix amygdaloides*).

Typical shrub-carr vegetation found in the Project Study Area included reed canary grass, smooth brome, sandbar willow, red-osier dogwood, peachleaf willow, and green ash.

Typical shallow marsh vegetation included narrow-leaf cattail and reed canary grass.

Farmed wetlands had sparse vegetation, mostly consisting of agricultural weeds and stunted crops.

Table 5.3.1: Vegetative Communities in Project Study Area

Vegetative Communities in Project Study Area		
Agricultural	Row/Traditional Crops	Corn, soybeans, alfalfa, wheat
	Specialty Crops	N/A
	Grasslands, Pasture, and Fallow Fields	Kentucky bluegrass, red osier dogwood, common plantain

Vegetative Communities in Project Study Area		
Non-Agricultural Upland	Forested Uplands	Red osier dogwood, box-elder, American elm, green ash
Wooded Wetlands	Hardwood Swamp	Green ash, black ash, American elm, black willow, box-elder, lake sedge, bristly buttercup, giant goldenrod, nannyberry, red-osier dogwood, reed canary grass, sandbar willow, tussock sedge, and devil's beggartick
Non-Wooded Wetlands	Wet Meadow	Reed canary grass, narrow-leaf cattail, common plantain, biennial wormwood, box-elder, blunt spikerush, Canada bluejoint, red-osier dogwood, tussock sedge, eastern woodland sedge, barnyard grass, fall panicgrass, sandbar willow, common reed, and peachleaf willow.
	Shrub-Carr	Reed canary grass, smooth brome, sandbar willow, red-osier dogwood, peachleaf willow and green ash.
	Shallow Marsh	Narrow-leaf cattail, green ash, and reed canary grass
	Farmed	Stunted crops, agricultural weeds

5.3.2 Acres of Land Cover Categories within the Project Boundary

Land cover, within approximately 1,360 acres, under consideration for Project facilities is described in the following sections. A summary of acreages for each land cover category is shown in Table 5.3.2. A summary of land cover within areas currently proposed for Project facilities is provided in Section 5.3.3.

5.3.2.1 Agricultural

Agricultural land cover includes actively cropped land. Cropland is the primary land cover found within the Project Study Area. Approximately 1,070 acres of actively cropped land are located within the Project Study Area. Approximately 676 acres of that land are owned by Point Beach Solar's affiliate. There are no areas of specialty crops, such as orchards or tree farms, within the Project Study Area. Point Beach Solar continues to work with landowners and licensees in the Project Study Area to minimize the impact of the Project on agricultural activities.

5.3.2.2 Non-Agricultural Upland

Non-agricultural uplands consist of forest, grasslands, and fallow fields. Within the Project Study Area, there are approximately 80 acres of forested land, 42 acres of grassland, and 5 acres of fallow field.

5.3.2.3 Wetlands

Wetlands and waterways in the Project Study Area were identified using field delineations. Approximately 72 acres of non-forested wetland, 59 acres of forested wetland, and less than 1 acre of open water are located within the Project Study Area.

5.3.2.4 Developed Land

Developed lands include residential, commercial, industrial, and roadways. Maintained gravel, paved, or lawn areas surrounding buildings are considered developed and are included in the total acreage of developed land. The Project Study Area includes approximately 31 acres of developed land.

Table 5.3.2: Acres of Land Cover Categories within Project Study Area

Acres of Land Cover Categories within Project Study Area		
Land Category		Acres ¹
Agricultural	Cropland	1,070
	Specialty Crops	0
Non-Agricultural Upland	Grasslands	42
	Fallow Field	5
	Forested Uplands	80
Wetlands/Waterbodies	Forested Wetland	59
	Non-Forested Wetland	72
	Open Water	Less than 1
Developed Land	Developed/Urban	31
Total		1,360

¹ Both solar panel and Gen-Tie line portions of the Project are included in the Study Area used to calculate land cover acres

5.3.3 Land Cover Impacts

Land cover impacts are summarized in Table 5.3.3 by the land cover categories described in Section 5.3.2. Impacts have been calculated within GIS software utilizing the previously described land cover digitized dataset and polygons representing the footprints of Project facilities. Land within the solar array fence lines is considered impacted; however, the area, exclusive of access roads will be revegetated as described in Section 6.5.3.4. Several small, farmed wetlands are located within the fenced areas; however, they have been avoided in the design of the panel arrays.

Collector circuits will be installed utilizing a combination of trenching and direction boring methods. The directional boring method will be utilized where collection crosses wetlands or waterways, with the exception of one wetland crossed by the alternate collection system

as described in Section 6.2.2. No permanent impacts to wetlands or waterways are anticipated. Less than 0.1 acre of temporary upland impacts associated with the collection bore pits is expected. Bore pits will be placed in previously disturbed, upland areas, to be determined prior to construction.

Table 5.3.3: Land Cover Impacts

Land Cover Impacts											
Land Cover Classification	Proposed or Alternative Array	Solar Array (within fence line, exclusive of access roads) ¹		Access Roads ¹		Collector Circuits ¹		Substation and Switchyard ²		Laydown Yards	
		Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp
Agricultural (Row/Traditional Crops) ³	Proposed	428.4	21.7	9.1	0.1	0.0	1.9	6.8	3.0	0.0	12.7
	Alternative	90.8	8.5	2.1	0.0	0.0	0.9				
Non-Agricultural Upland (Wooded)	Proposed	7.6	1.3	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	Alternative	2.6	0.3	0.3	0.0	0.0	0.0				
Non-Agricultural Upland (Prairie/Grasslands/Pasture/Fallow Field)	Proposed	1.3	0.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0	<0.1
	Alternative	1.9	0.2	<0.1	0.0	0.0	0.0				
Wetlands (farmed wetland only impacted) ⁴	Proposed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Alternative	0.00	0.00	0.00	0.00	0.00	0.01				
Waterbodies	Proposed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Alternative	0.00	0.00	0.00	0.00	0.00	0.00				
Developed and Residential (includes road ROW)	Proposed	0.6	0.9	0.2	<0.1	0.0	0.0	<0.1	0.1	0.0	0.3
	Alternative	0.0	0.0	0.1	0.0	0.0	0.0				
Total	Proposed	<u>437.9</u>	<u>24.6</u>	<u>9.8</u>	<u>0.1</u>	<u>0.0</u>	<u>1.9</u>	<u>6.8</u>	<u>3.1</u>	<u>0.0</u>	<u>13.1</u>
	Alternative	<u>95.3</u>	<u>9.0</u>	<u>2.5</u>	<u>0.0</u>	<u>0.0</u>	<u>0.9</u>				

¹ Impacts include area within 20 feet outside of fence line; impacts associated with collection system within array fence line are included in "Solar Array" category. All permanent array access roads are represented in

“Access Roads” category (Permanent). Construction access is represented in “Access Roads” category (Temporary).

² Impacts to substation and switchyard are combined and include access roads and detention basins. See table 5.3.4 for land cover summary of Gen-Tie line ROW.

³ No specialty crops will be impacted.

⁴ Approximately 3.3 acre (2.5 Proposed/0.8 Alternative) of wetland is located within array fence line; however, wetlands will be avoided by Project facilities.

The Project Gen-Tie line ROW includes 10.7 acres of predominantly agricultural land. One 0.7-acre wetland complex is present; however, both temporary and permanent impacts to the wetland have been avoided. Pole structures have been placed outside of the wetland and temporary construction access has been included off Tapawingo Road. Land cover impacts due to construction of the Gen-Tie line will be within agricultural and developed land categories only (Figure 2).

Table 5.3.4: Acres of Land Cover Categories within Gen-Tie ROW

Acres of Land Cover Categories within Gen-Tie Line ROW		
Land Category		Acres ¹
Agricultural	Cropland	9.5
Wetlands/Waterbodies	Non-Forested Wetland	0.7
Developed Land	Developed/Urban	0.6
Total		10.7

¹ Only land cover categories present within Gen-Tie ROW are listed

5.4 Wildlife

Wildlife habitat found within the Project Study Area was identified based on desktop habitat review, field investigations and observations, and state and federal information on threatened and endangered species.

5.4.1 Describe existing wildlife resources and estimate expected impacts to plant and animal habitats and populations.

The Project Study Area contains suitable habitat for a variety of common Wisconsin wildlife and plant species. Typical mammals found in northeast Wisconsin include white-tailed deer, common raccoon, coyote, eastern gray squirrel, groundhog, and opossum. Numerous bird species may also be found in the Project Study Area and vary depending on time of year. Wildlife may utilize agricultural fields to travel between preferred habitat, which is typically field edges, fallow fields, forests and wetlands. The Project will have minimal impact on wildlife species or their preferred habitats since the majority of impact from construction and operation will be on tilled land.

Summaries of the typical plant life located within the Project Study Area and impacts of the Project can be found in Section 5.3 and Table 5.3.2.

5.4.2 Avian and bat pre-construction surveys

5.4.2.1 *Provide a summary of pre-application consultation meetings held with DNR for the purposes of determining whether or not pre-construction bird and/or bat studies would be required for the project.*

The WDNR Natural Heritage Inventory (NHI) database review indicates that there are no known bat occurrences within one-mile of the Project Study Area. A bald eagle nest was recorded as within the Project Study Area during the WDNR NHI review; however, the nest is located outside of the Project Site and is greater than 660 feet from proposed areas of construction and operations. Further details regarding potential state and federally listed species has been provided in **Appendix M**.

Tree clearing within the Project Site will be minimized to the extent practicable. If tree removal is necessary, the Project will either clear outside of the Northern long-eared bat and affected migratory birds of concern roosting and nesting seasons and follow USFWS guidelines regarding acceptable dates for clearing in Wisconsin or conduct appropriate surveys prior to construction to avoid impacts to active roosts or nests.

5.4.2.2 DNR required avian and/or bat pre-construction

After consultation with the WDNR, it was determined that no pre-construction studies are required if human activities do not take place within 660 feet of bald eagle nests from January 15th - July 30th. The nest within the Project Study Area is located outside of the Project Site and is greater than 660 feet from proposed areas of construction and operations, therefore no further restrictions or pre-construction studies are required.

No avian post-construction mortality monitoring will be conducted for the Project. Post-construction avian mortality monitoring will be conducted at an adjacent solar generation facility (Two Creeks Solar) operated by an affiliate of Point Beach Solar. See Final Decision, issued on April 4, 2019, *Application for a Certificate of Public Convenience and Necessity of Two Creeks Solar, LLC to Construct a Solar Electric Generation Facility, to be Located in Manitowoc and Kewaunee Counties, Wisconsin*. Docket 9696-CE-100 (PSC REF#: 364423). Therefore, additional post-construction avian mortality monitoring in this area is duplicative and unnecessary.

5.5 Public Lands

Public land use information was acquired from the WDNR including National, State, and County Forests; Wildlife Management Areas (WMAs); Parks; Trails; and other managed lands as identified through the WDNR, USFWS, National Park Service, and USGS. Review of land ownership information for parcels in the Project Study Area was used to identify properties owned by federal, state, county, and township entities.

5.5.1 State properties, including: Wildlife Areas, Fisheries Areas, and State Parks

There are no public lands within the Project Study Area. The Two Creeks Buried Forest State Natural Area is a State property located within two miles of the Project Study Area. The western shoreline of Lake Michigan also lays within two miles of the Project Study Area.

5.5.2 Federal properties, including: Wildlife Refuges, Parks, and Scenic Riverways

The Ice Age National Scenic Trail (Ice Age Trail) is a thousand-mile footpath that highlights Wisconsin's glacial history and the landscape that the flow and retreat of the ice created. The hiking trail is not complete or contiguous; however, official segments are connected by unofficial connecting routes that often include public roads. The Point Beach Segment of the Ice Age Trail is located approximately 1.9 miles from the Project Study Area at its closest point. The Project will likely not be visible from the trail due to the surrounding dense tree cover. Trail segments within two miles of the Project Study Area are shown on Figure 4.1.6.3 in **Appendix A**. An unofficial connector of this segment is CTH V. CTH V is a main county highway and has no special protection or scenic designation.

In addition, there is a Waterfowl Protection Area (WPA), the Two Creeks Property WPA, managed by the USFWS and six Wetland Reserve Program (WRP) properties within two-miles of the Project Study Area. WRP properties located within two miles of the Project Study Area are privately held lands managed by the NRCS.

5.5.3 County Parks

Two Creeks County Park is a small local park located on Lakeshore Road and the shore of Lake Michigan. The park is within two miles of the Project Study Area. The park offers a picnic shelter, playground, parking, and boat launch to the lake. The park offers views of Lake Michigan; however, the solar array portion of the Project will not be visible from the park due to surrounding trees and distance.

The Manitowoc Public School District Rahr Memorial School Forest, which is part of the Manitowoc School District, is located within two miles of the Project Study Area's southeastern boundary. The school forest offers approximately 4.5 miles of trails and provides outdoor educational experiences for students and the surrounding communities. The forests and trails are generally located east of Lakeshore Road, west of Lake Michigan and within approximately one-half mile of CTH V. The Ice Age Trail runs through the school forests.

Table 5.5a: Public Lands in Project Study Area

Public Lands in Project Study Area	
State properties	None
Federal properties	None
County and Local Properties	None

Table 5.5b: Public Lands Within Two Miles Project Study Area

Public Lands Within Two Miles Project Study Area	
State Properties	Two Creeks Buried Forest State Natural Area
	Lake Michigan
Federal Properties	Ice Age National Scenic Trail (Ice Age Trail)
	Manitowoc County WPA – Two Creeks Property
County and Local Properties	Two Creeks County Park
	Manitowoc Public School District Rahr Memorial School Forest

5.6 Local Zoning and Safety

5.6.1. Provide a list of potential local issues normally associated with zoning, road use and safety, or other condition uses.

In February 2018, the Point Beach Solar development team met with the Manitowoc County Planning and Zoning Department at their offices in Manitowoc. On March 28, 2018, the County provided a letter to Point Beach Solar concluding as follows:

Wisconsin Stat. § 66.0401 makes plain, an owner may construct a solar energy system without a county zoning permit when the county lacks a procedure to determine if any permit it issues or any permit condition it imposes: (1) serves to preserve or protect the public health or safety; (2) does not significantly increase the cost of the system or significantly decrease its efficiency; or, (3) allows for an alternative system of comparable cost and efficiency. *Ecker Bros.*, 2009 WI App 112, ¶ 11. In this case, Manitowoc County does not have such a procedure in place. Thus, the County is without the authority to regulate the proposed solar energy system or require a zoning or setback permit for that system. *Id.*, ¶ 11.

The complete Letter is provided in **Appendix Q**.

The Applicant has since reached out to Manitowoc County Planning and Zoning Department and the Manitowoc County Highway Department on multiple occasions to confirm local zoning permits are not required.

5.6.1.1. Provide copies of all correspondence to and from local government pertaining to issues of zoning, safety, or local road use safety plans.

The County's Code Administrator, Reed Gaedtke, sent to Point Beach Solar several of the County plans with regard to zoning that provided general information about what the County would normally require if they were to issue a permit. **Appendix Q** includes the following County related documents: Chapter 8 General Zoning and Land Use Regulation, Chapter 9 Shoreland Zoning, Chapter 10 Setbacks, Chapter 29 Comprehensive Plan, Manitowoc County Park and Open Space Plan, Manitowoc County Farmland Preservation Program, and the Manitowoc County Highway Development Plan. Additionally, the 2022 Comprehensive Land Use Plan for the Town of Two Creeks is provided in **Appendix Q**.

5.6.1.2. Provide a discussion of how local concerns will be accommodated.

The County intends to forward any local concerns regarding the project to Point Beach Solar and to the Commission.

5.7 Land Use Plans

The 2022 Comprehensive Land Use Plan for the Town of Two Creeks is provided in **Appendix Q**.

5.8 Historical Resources

Documentation on Point Beach Solar's coordination with the Wisconsin State Historical Society (WHS) can be found in CONFIDENTIAL **Appendix N**.

5.8.1 Provide a list of all historical sites potentially affected by the proposed project.

Point Beach Solar has completed a Phase I cultural resource review of archaeological and historical sites within the Project Study Area and areas of potential indirect impact. The investigation includes a review of the WHS database to identify if the Project will have any impact on previously recorded historic properties. The WHS Wisconsin Architecture and History Inventory was reviewed by Commonwealth Heritage Group (Commonwealth) for listings within one-half mile of the Project Study Area. See CONFIDENTIAL **Appendix N** for a list of all known cultural and historical sites within the Project Study Area and a report summarizing the results of the archaeological and historical investigations.

5.8.2 *For each proposed site, list the county, town, range, section and ¼, ¼ section in which construction would occur.*

Construction activities will occur in northeastern Manitowoc County. Detailed information regarding these sites can be found in the Commonwealth Report contained in CONFIDENTIAL **Appendix N**.

5.8.3 *For each historical resource identified, describe how the proposed project might affect the resource and how the project could be modified to reduce or eliminate any potential effect on the resource.*

The Project, as designed, will not impact known historic or cultural resources. Detailed information regarding known historic or cultural resources can be found in the Commonwealth Report contained in CONFIDENTIAL **Appendix N**.

Pursuant to Federal and Wisconsin State laws, if grave markers or human skeletal remains are encountered during construction, all activities in the affected area will cease and the State of Wisconsin Burial Sites Preservation Office will be contacted for further instructions.

5.9 ER Review – Endangered, Threatened, and Special Concern Species and Communities

5.9.1 *Provide a copy of the DNR approved ER review and all supporting materials*

A Certified Endangered Resources (ER) review was submitted to the WDNR on December 14, 2018. The WDNR approved the ER review and provided concurrence and recommendations on December 20, 2018. The certified ER Review is provided as CONFIDENTIAL **Appendix M**. The ER Review summarizes all state-listed rare species, natural communities, and other natural features with element occurrence records within one mile of the Project Study Area. Appropriate follow-up actions will be coordinated with the WDNR, as necessary.

Point Beach Solar presented preliminary Project information regarding natural and biological resources in the Study Area to the USFWS on December 14, 2018. USFWS responded on March 20, 2019 with no concerns for listed species within the Project Study Area. See CONFIDENTIAL **Appendix M**.

5.9.2 *Include a map showing the location of endangered, threatened and special concern species and/or their habitat, and natural communities identified on the ER Review that occur within a minimum of one mile of the proposed project area or as agreed to by the DNR. ER Reviews, supporting materials, and maps should be filed as confidential documents.*

A figure displaying results of the Natural Heritage Inventory search is included as part of CONFIDENTIAL **Appendix M**.

6. Waterway/Wetland Permitting Activities

Point Beach Solar retained the services of Stantec Consulting Services (Stantec) to assess the wetland and water resources within the Project Study Area and to prepare the associated water quality permit applications. The area assessed encompassed land adjacent to the current Project Study Area, as described within the Wetland Delineation Report in Appendix O. Therefore, the term “Wetland Study Area” when used in this Section 6 is defined as the area described within the Wetland Delineation Report.

Stantec completed field surveys for a portion of the Gen-Tie line in the fall of 2017 and spring 2018. Additional areas of the Gen-Tie line were delineated on July 13, 2018. Field wetland and waterway delineations within the remainder of the Wetland Study Area were completed in August and September 2018. Ninety-four (94) separate wetlands were identified within the Wetland Study Area. Two hundred-ten (210) data points were completed to delineate the wetlands, describe adjacent uplands and agricultural fields and to document effectively drained conditions within actively farmed areas. Five wetland types were observed within the Wetland Study Area: hardwood swamp, wet meadow, shrub carr, farmed wetland and shallow marsh. A total of twelve (12) waterways were identified during the field surveys within the Wetland Study Area.

Detailed information on field assessment methodologies and wetland and waterway locations are included in the wetland delineation report for the Project. The delineation report is provided in the permit application package, as submitted to the WDNR as part of this application (**Appendix O**). The information in this section applies to both Proposed Array and Alternative Array in the Project Study Area. The statistics presented in Section 6 represent the results of the 2017 and 2018 field reviews.

6.1 Waterway Permitting Activities

The WDNR Wetland/Waterway Impact Location Table and Environmental Inventory Table (Tables 1 and 2, respectively) are provided in **Appendix O**.

The Project was designed to minimize and avoid wetland and waterway impacts, as practical. There are a total of 94 wetlands and 12 waterways that were identified or delineated within the Wetland Study Area. The wetlands and waterways are described within the Wetland Delineation Report provided with the Project Wetland and Waterway Permit Application.

6.2 Wetlands

The WDNR Wetland/Waterway Impact Location Table and Environmental Inventory Table (Tables 1 and 2, respectively) are provided in **Appendix O**. No wetlands will be permanently impacted due to construction or operation of the Project. One farmed wetland may be temporarily impacted due to proposed trenching of the alternate collection system, as described in Section 6.2.2.

6.2.1 Identify all wetlands on a map

Appendix A - Figure 2 and Figure 4.1.6.1 identify mapped wetlands from the WWI. The figures also identify additional wetlands or modifications to WWI boundaries based on field delineations in accordance with relevant guidance documents.

6.2.2 Wetland Crossings

6.2.2.1 Describe the length of each wetland crossing.

Point Beach Solar designed the Project to avoid permanent wetland impacts. An approximately 15-foot-long trench is proposed in wetland 3-W20 for installation of the alternate collection system, if required. The activity will result in less than 384 square feet (0.01 acre) of temporary impact to the farmed wetland which will be restored to preconstruction conditions upon completion of the cable installation.

6.2.2.2 For each crossing, identify wetland types

Table 6.2.2: Wetland Crossings

Crossing Description	Wetland Type (by WWI)	Wetland Type (by Plant Community)
Wetland 3-W20 – Alternate collection system (temporary impact only)	N/A	Farmed wetland

6.2.2.3 Based on discussions with DNR staff during pre-application consultations, document the presence and percent cover of key wetland invasive species at each wetland crossing.

The Wetland Study Area was evaluated for the presence of invasive species during field investigations in August and September 2018. The dominant species and general locations of the invasive species were noted on wetland delineation field mapping and later digitized in GIS

The most dominant invasive plant found during the 2018 field investigations was common reed. Common reed was found at only one location within the Wetland Study Area (wetland 3-W14), however it was the most dominant plant in this wetland. Wetland 3-W14 lies outside of all Project facilities and therefore will not be disturbed by construction or operational activities.

6.2.3 Sensitive Wetlands

The WDNR provides on-line mapping applications and GIS data that was utilized to determine the locations of sensitive resources. No sensitive wetlands, state or federally listed waterways, trout streams, fisheries, wilderness areas, wild or scenic rivers, recreational areas, or other sensitive resources of state or federal concern are impacted by

construction activities. No surface waters identified as outstanding or exceptional resources (Wis. Adm. Code Ch. NR 102) are impacted. Sensitive resources that are adjacent to the Project Study Area are described in Sections 6.2.3.1 – 6.2.3.14.

6.2.3.1 Cold Water Community as defined in Wis. Admin. Code § NR 102.04(3)(a), including trout streams, their tributaries, and trout lakes

No cold water communities, as defined in Wis. Admin. Code § NR 102.04(3)(a), including trout streams, their tributaries, and trout lakes are present within or adjacent to the Project Study Area.

6.2.3.2 Lakes Michigan and Superior and the Mississippi River

The shoreline of Lake Michigan is located approximately 600 feet from the nearest Project facilities. BMPs as described in Section 6.5 will be employed during construction of the Project; therefore, no impacts to Lake Michigan or its shoreline are anticipated. Manitowoc County Planning and Zoning Department does not require a shorelands permit because the Project is preempted by the CPCN process at the PSCW.

6.2.3.3 State- or federally-designated Wild and Scenic River

No state or federally designated wild and scenic rivers are present within or adjacent to the Wetland Study Area.

6.2.3.4 State-designated riverway

No state designated riverways are present within or adjacent to the Wetland Study Area.

6.2.3.5 State-designated scenic urban waterway

No state designated scenic urban waterways are present within or adjacent to the Wetland Study Area.

6.2.3.6 Environmentally sensitive area or environmental corridor identified in an area-wide water quality management plan, special area management plan, special wetland inventory study, or an advanced delineation and identification study

No environmentally sensitive areas or environmental corridors (as identified in area-wide water quality management plans, special area management plans, special wetland inventory studies, or advance delineation and identification studies) are present within the Wetland Study Area. Several properties enrolled in the U.S. NRCS WRP are located adjacent to the Project. These properties are displayed on **Appendix A - 4.1.6.3 Public Lands**. The properties will not be impacted by Project construction or operation.

6.2.3.7 Calcareous fen

No calcareous fens are present within or adjacent to the Wetland Study Area.

6.2.3.8 State park, forest, trail or recreation area

No state parks, forests, trails, or recreation areas are present within the Wetland Study Area. The closest State Park is the Point Beach State Forest, located approximately 2.8 miles southeast of the Wetland Study Area. The Point Beach State Forest will not be impacted by Project construction or operation.

6.2.3.9 State and federal fish and wildlife refuges and fish and wildlife management area

No state or federal fish and wildlife refuges are present within or adjacent to the Wetland Study Area. No fish and wildlife management areas are present within the Wetland Study Area. The Pietroske Waterfowl Production Area and the Two Creeks Waterfowl Production Area, managed by the Leopold Wetland Management District of the USFWS, are located approximately two miles south of the Wetland Study Area. These resources will not be impacted by Project construction or operation.

6.2.3.10 State- or federally-designated wilderness area

No state or federal designated wilderness areas are present within or adjacent to the Wetland Study Area.

6.2.3.11 State-designated or dedicated natural area

The Nipissing Swamp State Natural Area (SNA), the closest state designated natural area, is located approximately four miles southeast of the Wetland Study Area within the Point Beach State Forest. The SNA will not be impacted by Project construction or operation.

6.2.3.12 Wild rice water listed in Wis. Admin. Code § NR 19.09

No wild rice waters are present within or adjacent to the Wetland Study Area.

6.2.3.13 Surface water identified as outstanding or exceptional resource water in ch. NR 102, Wis. Adm. Code.

No outstanding or exceptional resource waters are present within or adjacent to the Wetland Study Area.

6.2.3.14 Other sensitive wetlands are deep marsh, northern or southern sedge meadow not dominated by reed canary grass, wet or wet-mesic prairie not dominated by reed canary grass, fresh wet meadows not dominated by reed canary grass, coastal marsh, interdunal or ridge and swale complex, wild rice-dominated emergent aquatic, open bog, bog relict, muskeg, floodplain forest, and ephemeral ponds in wooded settings.

No other sensitive wetlands are present within or adjacent to the Wetland Study Area.

6.3 Mapping Wetland and Waterway Crossings

Mapped wetland and waterway crossings are provided in the WDNR Permit Application in **Appendix O**. Maps are provided on 11x17 inch layouts at 1:4,800 scale and include the following:

- Recent air photo showing only the proposed facility (access road, collector circuit, substation, switchyard, etc.) crossing or adjacent to wetlands or waterways.
- Topographic map showing the facility (road, collector circuit etc.) crossing or adjacent to wetlands or waterways.
- Recent air photos showing the locations of the following items:
 - Facility crossing or adjacent to wetland or waterway;
 - Waterways;
 - WWI (as a transpicious layer);
 - Delineated Wetlands (clearly marked);
 - Hydric soils- (as a transpicious layer) indicated faintly to be used as secondary review, if needed; and
 - Locations for other Chapter 30 activities such as grading or riprap (labeled to correlate with Table 1).

6.4 Waterway/Wetland Construction Methods

The Project is designed to minimize temporary and permanent impacts to wetlands and waterways to the extent practicable. No wetlands will be permanently impacted due to construction or operation of the Project. One farmed wetland may be temporarily impacted due to proposed trenching of the alternate collection system, as described in Section 6.2.2.

6.4.1 Waterway Crossings – Construction Methods

No temporary clear span bridges are anticipated to be utilized for crossing any identified waterways. No waterways are anticipated to be impacted by the Project.

6.4.1.1 Describe specific methods to be used for crossings of any streams marked as perennial or intermittent on USGS topographic maps, including location and methods of construction for:

6.4.1.1.1 Access Roads

No delineated waterways will be impacted due to the installation of access roads.

6.4.1.1.2 Collector Circuits

Collector circuits will utilize directional drilling to cross any waterways. At this time boring details are not formally known. A typical boring for a solar project is 6-12 inches

in diameter and approximately 48 inches deep. The boring pit is approximately 48 inches deep and only large enough to complete boring activities. All boring pits will be setback from wetland and waterway areas. The locations of the proposed bore pits are contained in **Appendix A - Figure 2 and Appendix O**.

Please see **Appendix A – Figure 2** for the location of the proposed bore pits, associated required temporary workspace, and symbols representing the two installation methods (i.e., trench versus bore).

In general, access to bore pit sites will be along the collection corridor (shown as temporary impact area in **Appendix A – Figure 2**). Sites where additional temporary construction access is needed are also shown on **Appendix A – Figure 2**. Associated impacts also have been added to the WDNR tables provided.

6.4.1.2 Describe cleaning of machinery to prevent spread of invasive species.

Machinery will be cleaned prior to delivery. If cleaning is needed throughout construction, cleaning will take place on aggregate in the laydown yard. To prevent the spread of invasive species into other areas to the extent practicable, all equipment used, including construction matting, will be cleaned prior to work in areas without invasive species. If possible, construction matting for use in invasive species areas will be designated prior to the start of construction to minimize the time and expense needed to clean the mats.

6.4.1.3 Describe the proposed area of land clearance and disturbance at waterway crossings and the types of equipment proposed for the work.

No waterway crossings are anticipated for the Project.

6.4.1.4 In the case of underground construction for collector circuits, describe the proposed method for crossing the stream or river. For boring operations, provide the size, depth and location of boring pits and the estimated amount of excavated materials that will result.

Collector circuits will utilize directional drilling to cross any waterways. At this time boring details are not formally known. A typical boring for a solar project is 6-12 inches in diameter and approximately 48 inches deep. The boring pit is approximately 48 inches deep and only large enough to complete boring activities. All boring pits will be placed in upland areas, setback from wetlands. Boring pit locations are shown in **Appendix A – Figure 2 and Appendix O**.

6.4.1.4.1 Describe methods for de-watering of boring pit or structure foundations. Include a discussion of discharge locations and suspended solids standards for discharge water.

If dewatering is required, all water will be pumped away from any existing waterways and will be kept onsite. Water will be pumped to a vegetated area to help filter any soil particle that may be in the water.

6.4.1.4.2 *Identify contingency plans for bore refusal and frac-outs if directional boring is proposed. Provide scaled pre and post-project diagrams for all crossings including top view and cross section or side views.*

Contingency plans for bore refusal and frac-outs will be developed by the construction contractor prior to construction start by the horizontal directional drilling (HDD) contractor. The plans are expected to include the following:

Prior to Construction:

- The drilling entry and exit areas, surrounding work areas, and the drilling route (to the extent accessible) will be surveyed to ensure there are no protected resources on the surface.
- Any sensitive cultural or environmental resources will be flagged for avoidance or construction limits will be clearly marked.
- Barriers will be placed between the bore site and any nearby sensitive resources.
- Field personnel will be briefed on monitoring and timely reporting of frac-outs.
- Necessary response equipment will be maintained on-site or at a readily accessible location.

Contingency Response:

- Once a frac-out is identified, all drilling activities will be stopped and the location and extent of the frac-out is determined.
- All necessary notifications will be made to the proper authorities.
- Appropriate mitigations will be taken based on the nature of the frac-out.
- After the frac-out is stabilized and any required removal is complete, post clean up conditions will be documented and reported as required.

While not anticipated, if there is general bore refusal, the proposed HDD alignment will be modified using the same general location with drilling reattempted. If the HDD bore cannot be advanced and abandonment is required, the bore hole will be grouted with an approved material.

6.4.2 Wetland Crossings – Construction Methods

No wetlands will be permanently impacted due to construction or operation of the Project. One farmed wetland approximately 15 feet in length may be temporarily impacted due to proposed trenching of the alternate collection system. The resulting temporary impact will be less than one-tenth of an acre to the farmed wetland.

6.4.2.1 *Describe specific methods to be used for wetland crossings including location and methods of construction for:*

If needed, construction mats will be used to reduce impacts to wetlands or other sensitive areas; however, at this time no temporary wetland impacts associated with construction

matting are anticipated. Construction matting dimensions are typically 4 feet x 16 feet x 1 foot. If required, the use of the construction mats in wetlands will be determined by an examination of site specific soil stability and moisture content at the time of construction. Where possible, low ground pressure tracked equipment will be used to further minimize the use of construction mats and surficial wetland impacts.

6.4.2.1.1 Access Roads

No wetlands or waterways will be permanently or temporarily impacted due to installation of Project access roads.

6.4.2.1.2 Collector Circuits

Collector circuits were designed to avoid wetland impacts, with the exception of one small farmed wetland crossing within the alternate collection system. One small, low quality, farmed wetland is proposed to be crossed with trenching methods. The temporary disturbance associated with the trenching activity will cause less impact to the environment than the installation of the bore pits needed to avoid the wetlands.

6.4.2.2 Describe cleaning of machinery to prevent spread of invasive species.

Equipment that is brought on site will be clean. If machinery needs to be cleaned throughout construction it will be cleaned in the laydown yard on an aggregate surface. To prevent the spread of invasive species into other areas to the extent practicable, all equipment used, including construction matting, will be cleaned prior to work in areas without invasive species. If possible, construction matting for use in invasive species areas will be designated prior to the start of construction to minimize the time and expense needed to clean the mats.

6.4.2.3 Describe the proposed area of land clearance and disturbance at wetland crossings and the types of equipment proposed for the work.

No permanent impacts to wetlands are expected due to construction of the Project.

Temporary impact to a single farmed wetland will occur for the trenching of alternate collector system, should it be constructed. Temporary impacts associated with the alternate collector system installation will be less than 0.01 acres.

6.4.2.4 Describe methods and discharge locations for site de-watering, and locations for stockpile of fill materials.

If site dewatering is required during construction all dewatering will take place locally onsite. Water will be pumped to a well-vegetated area where it can be discharged without causing erosion. Work will comply with WDNR Technical Standards for dewatering.

While dewatering is not expected, should localized, small scale dewatering be required for removal of accumulated rainfall in excavations, water will be discharged from pumps in a diffused manner away from active row crops. If discharge away from cropped areas is not

feasible for any reason and damage does occur, surface soil conditions will be restored and owners will be compensated for crop damage as agreed upon by the parties.

6.4.2.5 *In the case of underground construction for collector circuits, describe the proposed method for crossing the wetland. For boring operations, provide the size, depth and location of boring pits and the estimated amount of excavated materials that will result.*

A single farmed wetland is proposed to be temporarily impacted due to installation of the alternate collector circuit, if needed. The proposed crossing is less than 15 feet in length and will impact less than 0.01 acre of a farmed wetland. The wetland will be restored to preconstruction conditions and elevations upon completion of the cable installation. The single trenched alternate collector system location is shown in **Appendix A – Figure 2** and **Appendix O**.

6.4.2.5.1 *Describe methods for de-watering of boring pit. Include a discussion of discharge locations and suspended solids standards for discharge water.*

No borings are anticipated for installation of the collector system to avoid wetlands; therefore, no boring pits will be required.

6.4.2.5.2 *Identify contingency plans for bore refusal and frac-outs if directional boring is proposed. Provide scaled pre and post-project diagrams for all wetland crossings including top view and cross section or side views.*

No boring of wetlands is planned for the installation of the collector system.

6.5 Erosion Control and Storm Water Management Plan

6.5.1 *Erosion Control Methods and Materials*

See **Appendix R** for the preliminary Erosion Control Plan and Storm Water Management Plans.

6.5.1.1 *Soil and slope stabilization*

The existing condition of the Project Site will be bare earth and undesirable weeds from previous agricultural use. Temporary seeding of the entire project area, prior to other construction activities, including vegetative buffers will provide stabilization.

6.5.1.2 *Seeding and mulching*

Point Beach Solar will install permanent seed mixes following construction disturbance. Permanent seed will be installed with broadcast methods or with a seed drill. Except areas designated to receive erosion control blanket, all disturbed portions of the site receiving

permanent seeding shall receive mulch. Mulch shall comply with the WDNR conservation practice standard 1085.

Point Beach Solar worked with a qualified vegetation consultant to prepare a Vegetation Management Plan that describes seeding and re-vegetation options in **CONFIDENTIAL Appendix H**.

6.5.1.3 Matting, tracking pads, silt fences, stockpile protection

Construction mats will be used to reduce impacts to wetlands if needed. The construction matting dimensions are typically 4 feet x 16 feet x 1 foot. The use of the construction mats in wetlands will be determined by an examination of site specific soil stability, moisture content at the time of construction. Where possible, low ground pressure tracked equipment will be used to further minimize the use of construction mats and surficial wetland impacts. Refer to **Appendix R** of the Erosion Control Plan for additional BMP detail.

6.5.1.4 Dewatering-related erosion and sediment control

If dewatering or pumping of water is necessary, all water from dewatering or trench draining activities must be discharged in a manner that does not cause nuisance conditions. Such discharge will not cause erosion in receiving channels, on downslope properties, or inundation in wetlands causing significant adverse impact to the wetland. If the discharge from the dewatering or pumping process is turbid or contains sediment-laden water, it must be treated through use of sediment traps, vegetative filter strips, flocculants, or other sediment reducing measures such that the discharge is not visibly different from the receiving water.

6.5.1.5 Channel protection

Point Beach Solar will place fiber log as specified on sheet C-215 for protection in high water zones until vegetation is established.

6.5.1.6 Any other appropriate erosion control measures

See Erosion Control Plan/erosion control site map in **Appendix R** for additional detail.

6.5.1.7 Details and typical section drawings of all the erosion control methods utilized

The details and typical section drawings of all erosion control methods utilized are included in the Erosion Control Plan, which is included herein at **Appendix R**.

6.5.2 Erosion Control Measure Site Plan

6.5.2.1-6.5.2.6 Construction site boundary

See **Appendix R - Erosion Control Plan** in Appendix A, Exhibits 1-1 to 1-3, 2-1 to 2-3, and 3-1 to 3-3) for the construction site boundary, the location of all erosion control measures, the locations of stockpiled soil, vehicle equipment access sites, areas of disturbance, and drainage area configuration. The Project Site will be accessible from Highway 42, E. Tapawingo Road, Lakeshore Road, and Nuclear Road.

6.5.2.7 Surface water diversion measures

No surface water diversion methods will be utilized.

6.5.2.8 Topography

Site topography is predominantly flat with slopes ranging from 0-6%. Most of the proposed Project Study Area is currently agricultural land with small ranges of woodland and grassland intermixed. Elevations across the Project Study Area range from approximately 585 feet to 690 feet.

6.5.2.9 Existing floodplains and wetlands

All Project facilities lay within FEMA flood zone “X” which indicates an area of minimal risk and is outside the 1 percent and 0.2 percent annual chance floodplains (100 and 500-year floodplains). The southeastern most corner of the Wetland Study Area lies within the 0.2 percent annual chance (500-year floodplain). No facilities are planned within the area. There are numerous delineated wetlands both surrounding and inside of the Project Study Area. Wetlands within the Project Site will be protected from construction activities by installing silt fence around the wetland perimeter of all wetlands and maintaining a temporary cover crop around the edges of the array bordering farmed wetlands until permanent wetland seed is installed.

6.5.2.10 Location of trees and unique vegetation

Tree clearing within the Project Area will be minimized to the extent practicable. If tree removal is necessary, the Project will either clear outside of the Northern long-eared bat and affected migratory birds of concern roosting and nesting seasons and follow USFWS guidelines regarding acceptable dates for clearing in Wisconsin or conduct appropriate surveys prior to construction to avoid impacts to active roosts or nests.

6.5.3 Sequence of Erosion Control Measures

6.5.3.1 Clearing and grubbing

The majority of the Project Site will not require clearing and grubbing due to the existing condition of the Project Site being tilled agricultural fields. It is expected there will be approximately five acres or less of clearing and grubbing necessary.

6.5.3.2 *Material installation*

Appendix R – Erosion Control Plan (Appendix H) contains WDNR BMP standards that describe in detail how BMP materials are to be installed.

6.5.3.3 *Channel construction*

Point Beach Solar will place fiber log for channel/swale protection until vegetation is established.

6.5.3.4 *Revegetation processes*

Point Beach Solar will implement BMPs to minimize impacts to soil on the Project Site so that in the future, the Project Site may be returned to active agricultural practices. The Vegetation Management Plan provides guidance on practices to maintain and potentially improve soil health, temporary seed mix installation rates and timing for soil stabilization after construction, permanent seed mix design and installation locations, seed bed preparation, and vegetation maintenance for the duration of the Project.

Site revegetation will include planting native species around panel arrays, as feasible and where compatible with solar panel design and facility operations. Three native seed mixes have been designed for the Project and consist of a native graminoid seed mix, an upland pollinator friendly seed mix, and a wetland pollinator friendly seed mix. A low maintenance graminoid seed mix consisting primarily of non-native fine-leaved fescues has been designed for the Project for installation directly under and between the panel rows where permanent, low maintenance, low-growing, shade and drought tolerant vegetative cover is necessitated. Point Beach Solar and a qualified vegetation consultant consulted guidance from leading organizations such as USFWS, Xerces Society, and reputable seed suppliers to identify locally appropriate seed mixes, timing of application, and seeding techniques that were used in a revegetation plan for the Project.

In the current design, the distance between rows of panels (from post-to-post) is approximately 13.2 feet. The distance between the edge of one panel and the edge of the next will be approximately six feet. Final spacing will be determined once the final equipment is selected and detailed engineering is complete.

Anticipated seed mix installation locations within the fenced arrays and vegetation management methods are provided within the Vegetation Management Plan in CONFIDENTIAL **Appendix H**.

6.5.3.5 *Seeding and mulching/matting*

Point Beach Solar will install temporary and permanent seed by broadcast methods or with a seed drill. With the exception of areas designated to receive erosion control blanket, all disturbed portions of the site receiving permanent seeding shall receive mulch. Mulch shall comply with the WDNR conservation practice standard 1085.

Sequence of Erosion Control Measures**Phase I**Initial Stabilization

- At the start of construction, the Project Site will primarily consist of bare earth

Phase IIPre-Grading BMPs

- Install perimeter control including silt fence and rock construction entrance, minimize disturbance to temporary vegetation planted in Phase I.
- Install all other erosion control BMPs that will not be affected by site grading.
- Initial erosion control devices will be left in place until final stabilization happens.

Phase IIISite Grading

- Mass grading in select areas on site. If topsoil is stripped during mass grading, it should be immediately re-spread at the completion of mass grading rather than stockpiled.
- Construct onsite gravel roads, which consists of stripping topsoil and constructing aggregate roads. Topsoil stripped from the aggregate roadways will be re-spread elsewhere onsite.
- Begin temporary stabilization and seed of mass graded areas that will not be disturbed for a period of 14 days.
- Complete any BMP installation that was required to be done after grading is complete.

Phase IVSolar Construction

- After completion of the site work, construction of the solar features will begin with pile driving. Piles will be directly driven with no excavation required.
- Trenching for underground electrical will commence at the completion of pile driving. Any stabilized ground that is disturbed by the trenching process will be immediately re-stabilized.
- If needed, concrete pads will be constructed to support the electrical equipment.
- Racking and solar modules will be installed on the steel piles.

Phase VFinal Stabilization

- Initiate seeding.
- Once seed is established at a uniform 70% coverage, remove all temporary control BMP's and stabilize any areas disturbed by their removal.
- Monitor stabilized areas until final stabilization is reached.

Point Beach Solar worked with a qualified vegetation consultant to finalize a Vegetation Management Plan. The Plan specifies seed mixes, anticipated seed installation locations, seed installation methods, and vegetation maintenance following permanent seed installation. The Plan is based on seed mixes that are readily available with the understanding that seed availability, Project design, and other factors may warrant changes or an update closer to the time of seeding.

The fenced arrays will contain areas planted to only graminoids (grasses, sedges, and rushes - no wildflowers) and areas planted with a combination of graminoids and wildflowers (prairie and wetland meadows). A low maintenance, low growing, shade tolerant graminoid mix has been selected for installation under and between the panel rows. This mix primarily contains non-native turf species that are anticipated to establish dense vegetative cover quickly and should minimize short and long-term maintenance, such as mowing and herbicide treatments to control incompatible weeds, when compared to a native seed mix. A native grass seed mix would not be suitable within the panel rows due to height restrictions (vegetation needs to stay below two feet in height to minimize impacts to the panels) and shading concerns from the panels. Although most of the species within the low maintenance graminoid seed mix are non-native, they are not considered noxious weeds nor are they anticipated to have a negative impact on the revegetation of native plantings or adjacent agricultural land use. This low maintenance graminoid mix is also recommended for installation around the invertors and within a five-foot buffer of access roads to maintain low stature and green vegetative cover where this is adjacent vehicle traffic.

An upland pollinator friendly seed mix was developed for the Project Site to provide upland habitat that has a diversity of wildflowers with flowering occurring over each of the three blooming periods and with native bunch grasses and sedges to provide potential nesting and overwintering sites for insects and maintain soil health. This mix is proposed to be installed in areas outside of a 20-foot buffer from the panel arrays in areas that are near existing habitat; specifically, areas that are not in active agricultural production such as forested lands, tree lines, unfarmed wetlands, and waterway buffers. When adjacent to active agricultural lands outside of the array fence, a 30-foot buffer of the native graminoid seed mix will be installed between the pollinator friendly seed mix and the agricultural field to reduce potential herbicide drift impacts to flowering species. Additionally, farmed wetlands will be seeded with a wetland pollinator friendly seed mix.

A native graminoid seed mix consisting of grasses, sedges, and rushes with a range of light tolerance has been designed for installation outside of the exterior of the panel arrays and up to the array fence in upland areas where the pollinator friendly seed mix is not suitable due to size of the area or location. This mix contains deep-rooted species that will improve soil health.

Point Beach Solar will implement appropriate ground preparation to minimize soil disturbance, reduce the likelihood of bringing new weeds to the surface, and reduce competition for species planted on-site. During operations of the Project, consistent with standard industry practice, weed control may consist of mowing and herbicide treatments

as needed to control weedy and invasive plant species on-site. All necessary herbicide spraying will be completed by certified pesticide applicators. The Vegetation Management Plan provides guidance on management strategies and recommended timing for invasive and incompatible weed species within the planting areas.

Since construction and operations of the Project calls for limited disturbance, it is unlikely that a significant amount of earthwork and soil disturbance will occur. As a result, erosion control concerns are not expected to be a large factor. Nevertheless, erosion and sediment control measures will be implemented and maintained by construction personnel in accordance with plans that are developed for the Project such as the SWPPP and National Pollutant Discharge Elimination System (NPDES) permits. These measures will be continued until the area is stabilized and vegetation is in place. Operations and maintenance activities will be confined to access roads and the solar panel sites to the extent possible.

Point Beach Solar will minimize the amount of grading that is required to reduce disruption to the valuable topsoil. No work is planned that will significantly change the soil nutrient content in the Project Site, therefore once the site is fully decommissioned the property owner will be able to return the land to agricultural use.

Point Beach Solar will communicate and provide notice in accordance with the terms of the respective lease agreements with the owners of the land at the Project Site.

6.5.4 Off-Site Diversion Methods

No off-site diversion methods are anticipated to be used for the Project.

6.5.4.1 Identify off-site contributions of water affecting project construction sites

Small areas of contributing sub-catchments will sheet flow onto the Project Site. See **Appendix R** – Erosion Control Plan (Appendix A, Exhibits 1-1 to 1-3) for reference.

6.5.4.2 Methods of controlling off-site water contributions

Off-site water contributions will be treated with on-site storm water discharge. No additional special considerations for off-site water contributions are necessary.

6.5.4.3 Site plan indicating:

6.5.4.3.1 Where the off-site water is originating from

See **Appendix R** – Erosion Control Plan (Appendix A, Exhibits 1-1 to 1-3).

6.5.4.3.2 Locations of diversion measures on-site

No off-site diversion methods are anticipated to be used for this Project.

6.5.5 Provisions for Inspection and Maintenance

During construction the work force will consist of equipment operators, laborers, and management personnel. The equipment operators will operate civil equipment, pile drivers, cranes, and material handling equipment, such as skid steers. The majority of the personnel required to construct a solar project are laborers that install racking systems and place modules. Approximately 200-300 workers will be needed to complete the project. The plant operators will have specific training that correlates with running a PV plant and a high voltage substation.

Point Beach Solar will also utilize an internal environmental construction compliance program that ensures compliance with all applicable environmental permits, plans, and regulations. An environmental monitor will conduct on-going on-site inspections during construction to ensure all employees are environmentally aware and ensuring compliance throughout construction. Moreover, Point Beach Solar will implement a CCP consisting of environmental training, regularly scheduled inspections, and tools such as permit matrices to ensure all environmental laws and conditions are met. Under the CCP the environmental lead will provide environmental training to all managers and the foreman prior to construction. Thereafter, the contractor will ensure any employee who works at the Project Site is trained in accordance with the CCP. During construction the environmental lead will conduct weekly meetings at the site as well as regular inspections to ensure all environmental regulations and conditions are being implemented.

6.5.5.1 The regular inspection of all erosion control efforts per the requirements of Wis. Admin. Code § NR 216.

6.5.5.1.1 Identify who will perform the inspections.

The construction contractor shall be responsible for conducting site inspections in compliance with the Wisconsin Pollutant Discharge Elimination System (WPDES) Permit.

6.5.5.1.2 Specify when the inspections will occur.

The construction site will routinely be inspected at least daily during construction activity.

6.5.5.1.3 Any special circumstances initiating an inspection.

The construction contractor must inspect the site within 24-hours after a rainfall event greater than 0.5 inches in a 24-hour period.

6.5.5.2 The regular maintenance of all erosion control efforts.

The construction contractor will be required to inspect all erosion prevention and sediment control BMPs and pollution management measures to ensure integrity and effectiveness during all routine and post rainfall event inspections.

6.5.5.2.1 *Identify who is responsible for the maintenance.*

The construction contractor is responsible for the inspection and maintenance of all temporary and permanent erosion control measures.

6.5.5.2.2 *Specify corrective actions, if site is not maintained according to provisions.*

If any site materials are not functioning properly, the inspector will note that circumstance and assign personnel to make the appropriate repairs or corrections. The inspector will review those locations to confirm the repairs or corrections were properly installed.

6.5.6 *Post Construction Storm Water Management***6.5.6.1 *Develop a storm water management plan per the requirements of Wis. Admin. Code § NR 216.47.*****6.5.6.1.1 *Where applicable, describe and provide details on the best management practices that will be used to meet the performance standards of Wis. Admin. Code § NR 151.12.***

To ensure that at least 80% of total suspended solids are removed from site runoff, all runoff from new impervious aggregate roads is routed through vegetated buffer strips made up of native grasses. The runoff from the impervious aggregate roads contains the heaviest concentration of pollutants. The runoff from solar modules also travels over a significant length of vegetation prior to leaving the site. By having flow lengths over vegetation equal to or greater than the flow length over any upstream impervious surface, sufficient pollutants are removed to comply with this post construction Total Suspended Solids Performance Standard.

To achieve the required post construction rate control, the approach will be to take advantage of a change in land use from annually rotated cropland to permanently vegetated grass ground cover over a majority of the site. The existing site condition of straight row crops in Hydric Soil Group D has a NRCS Curve Number (CN) of 89. When converted to a fully vegetated meadow condition, the same soil has a CN of 78. The existing site composite CN is 88. Accounting for the proposed impervious aggregate areas, concrete areas, a portion of the impervious solar modules, and the vegetation planted below the solar modules, the proposed site composite curve number has been determined to be 84. The reduction in overall CN from 88 to 84 causes a reduction in the rate of stormwater runoff for all storm events.

Wis. Admin Code § NR 151.124 has certain infiltration requirements dependent upon site conditions. However, infiltration will be exempt per Wis. Admin Code § NR 125.124 (4)(C)(2) which states “[w]here the least permeable soil horizon to 5 feet below the proposed bottom of the infiltration system using the U.S. department of agriculture method of soils analysis is one of the following: sandy clay loam, clay loam, silty clay loam, sandy silt, silty clay, or clay.” The soils on the site are lean clays, the properties of this soils

classification are not conducive to infiltration and therefore no infiltration will be required for the site.

Farmland

Because the construction and operations of the Project calls for limited disturbance, it is unlikely that a significant amount of earthwork and soil disturbance will occur. Moreover, Point Beach Solar will use a temporary cover crop and permanent seed mixes to minimize erosion. In addition, erosion and sediment control measures will be implemented and maintained by construction personnel in accordance with plans that are developed for the Project such as the SWPPP and NPDES permits. These measures will be continued until the area is stabilized and vegetation is in place. As a result, impacts from erosion and runoff to adjacent farmlands are not expected.

Solar projects are not known to have impacts on surrounding landowners who wish to continue their farming practices (**Appendix Z – Solar Array Examples - Farming and Vegetation**). In the unlikely event that impacts occur, Point Beach Solar will take the following actions: (1) investigate the issue; (2) determine if a reasonable and practical solution can resolve the issue; and/or (3) if appropriate, Point Beach Solar will work with the landowner on a reasonable mutually agreeable solution.

Examples of large solar facilities where grass groundcover was successfully established include the Moore Solar Energy Center and Sombra Solar Energy Center in Ontario, Canada (formerly owned and currently operated by an affiliate of Point Beach Solar).

6.6 Materials Management Plan

6.6.1 Haul Routes

6.6.1.1 Indicate how and where hauled materials will be routed, including:

6.6.1.1.1 Inbound materials

Materials will arrive at the Project Site off of Highway 42. Once the trucks are on Highway 42, the materials will be brought onto either Nuclear Road, Lakeshore Road, or East Tapawingo Road until they arrive to the proposed driveway entrances.

6.6.1.1.2 Outbound materials

Outbound materials will head west on Nuclear or East Tapawingo Roads until they arrive at Highway 42. Once intersecting with Highway 42, they will head north or south depending on their final destination.

6.6.1.1.3 Clean fill materials

At this time clean fill material providers have not been identified. The Project Site will procure clean fill from local providers near the site. It is anticipated that the clean fill

materials will use Highway 42 to travel to the project. Once in the vicinity of the site the deliveries will travel down Nuclear Road or Irish Road.

6.6.1.1.4 Contaminated materials

Any contaminated materials that are discovered will leave the site on either East Tapawingo Road or Nuclear Road. From there the transportation will turn onto Highway 42 and travel towards a qualified disposal location.

6.6.1.2 Alternate locations if necessary.

Not applicable at this time.

6.6.1.3 Include a haul route diagram indicating haul route locations.

Refer to **Appendix E** – Roads Infrastructure and Transportation for a diagram of potential haul routes.

6.6.2 Stockpile Areas

6.6.2.1 List and describe:

6.6.2.1.1 Material to be stockpiled

Solar field construction consists of materials being evenly spread throughout the Project Site. Materials will be stored in the laydown yard and spread throughout the site boundaries. The goal will be for material to be offloaded at the installation location.

6.6.2.1.2 Where will material be stockpiled on-site

Material will be stockpiled throughout the solar array and in the laydown yard.

6.6.2.1.3 Measures to protect stockpiled areas, if applicable

Soil stockpiles will be protected per the site specific storm water plan to prevent erosion.

6.6.2.2 Provide a plan view diagram indicating stockpile area locations.

Specific stockpile locations have not yet been identified and will not be known until the construction contractor plans the work in more detail closer to the start of construction.

6.6.3 Equipment Staging Areas

6.6.3.1 Where equipment will be stored on-site

Equipment will be stored in the laydown yard and throughout the solar array. Some equipment will be left in place at the end of shift, while other equipment will be transported back to the laydown yard.

6.6.3.2 *Include a plan of equipment storage areas on-site*

The laydown staging area will include trailers for the construction contractors, parking space for workers, and temporary storage areas for equipment prior to delivery to the installation location.

6.6.3.3 *Spill control and kits on-site*

Spill control kits will be stored throughout the Project Site.

6.6.4 *Field Screening Protocol for Contaminant Testing***6.6.4.1 *How will the materials be screened***

If soils are discovered with potential contamination, the soil will be removed and tested at a certified testing lab.

6.6.4.2 *Where will the materials be tested*

Point Beach Solar anticipates using Synergy labs for materials testing. Synergy is located approximately a one-hour drive from the Project.

6.6.4.3 *What protocols will be followed*

If contaminated soils are found, construction in the area will stop until remediated. The area for potential contamination will be flagged off and remediated.

6.6.4.4 *How work will be impacted*

Work will be stopped in the area for potential contamination until remediated.

6.6.5 *Estimated Types, Concentrations, and Volumes of Contaminated Materials*

A Phase I Environmental Site Assessment (ESA) was conducted in October 2018 to identify if any contaminated materials existed on site. No Recognized Environmental Conditions (RECs) were identified on Project Site. In an area near the Alternative Array an abandoned storage tank was identified. The tank was empty and there was no evidence of petroleum or chemical discharge observed in the vicinity of the tank or in surrounding low land areas. Although the tank is not considered a REC, if the Alternative Array where the tank is located is selected for use, the tank would be properly removed and disposed of in accordance with State regulations.

6.6.6 *Methods for Dewatering of Excavated Materials***6.6.6.1 *What methods will be used to correct the situation (i.e. how will water be removed)***

The Project will have only small amounts of excavation. If during excavation, if the material is discovered to have too much water, it will be stockpiled next to the excavation and allowed to naturally dry.

6.6.6.2 *Where these methods will take place on-site*

Stockpiling, if required, will occur adjacent to the excavation location.

6.6.7 *Estimated Volumes of In-channel and Upland Excavated Materials***6.6.7.1 *Volume of Dredged Materials (cubic yards)*****6.6.7.1.1 *Excavation from bed and bank of waterway***

No dredging is expected.

6.6.7.1.2 *Excavation from wetland*

No excavations from wetlands are planned.

6.6.7.2 *Volume of Upland Materials (cubic yards)*

There is a total of approximately 33,000 cubic yards (CY) of cut and fill on site. This volume includes mass grading for the array racking and substation area only. This volume does not contain any additional grading potentially necessary for access roads.

6.6.7.2.1 *Excavation from areas outside of waterway and wetlands.*

There will be limited areas of grading for solar modules and trenching of the collector lines that will result in some excavation.

6.6.8 *Estimated Volumes and Location of Re-used In-Channel and Upland Excavated Materials***6.6.8.1 *Reuse of Dredged Materials*****6.6.8.1.1 *Provide the total volume of reused dredged materials in cubic yards.***

No dredging is expected.

6.6.8.2. Reuse of Upland Materials**6.6.8.2.1. Provide the total volume of reused upland materials in cubic yards.**

There is a total of approximately 33,000 CY of material to be reused on site. The volume of disposed materials is expected to be minimal.

6.6.8.2.2. Provide the location either on project plans or provide off-site address, property owner, and site map drawn to scale.

Material will be spread to provide fill in areas throughout the Project Site as needed.

6.6.8.2.3. Provide the purpose of the upland material usage.

Reused material will provide fill for areas currently out of tolerance for the proposed tracker system as well as fill for any other grading required on the Project Site.

6.6.9 Off-site Disposal Plans for Contaminated Materials and Non-Contaminated Materials**6.6.9.1 Disposal of Dredged Materials**

There is no plan to dredge.

6.6.9.2 Disposal of Upland Materials

There is no contaminated material anticipated to be encountered on Project Site based on preliminary information collected.

6.6.9.2.1 Total volume of disposed materials (cubic yards)

There is a total of approximately 33,000 CY of material to be reused in upland areas on the Project Site. Non-hazardous waste materials will be disposed of at a local landfill or recycling facility.

6.6.9.2.2. Disposal site location

The construction contractor will dispose of excess material in upland areas on the Project Site as available to maintain allowable grading for tracker mounting system.

6.6.9.2.3. Type of disposal site (i.e. confined disposal facility, landfill, etc.)

Since this requirement pertains to grading and other site work that requires moving non-contaminated dirt around the Project Site, the construction contractor will spread excess material in upland areas on the Project Site as fill. Non-hazardous waste materials will be disposed of at a local landfill or recycling facility.

6.6.9.2.4. Disposal site name and address

Since this requirement pertains to grading and other site work that requires moving non-contaminated dirt around the site, this material will be spread on the Project Site. Non-hazardous waste materials will be disposed of at a local landfill or recycling facility. Specific disposal sites will be determined closer to construction.

6.7 Dewatering Plan

6.7.1. Dewatering/Diversion of Flow

If dewatering is required, all water will be pumped away from any existing waterways and will be kept onsite. Water will be pumped to a vegetated area to help filter any soil particles that may be in the water.

6.7.2. Downstream Impact Minimization

All areas to be part of the solar array will have a reduction in Curve Number (CN) resulting in a lower site discharge than the existing condition. The sub-station area stormwater runoff will be directed to and collected in a stormwater detention basin.

6.7.3. Analysis of Possible System Overload Scenarios

6.7.3.1. Estimated volume of system overload (i.e. what rainfall overloads the system)

Not applicable, because there are no permanent water quality features that could potentially overload.

6.7.3.2. Estimated frequency of system overload (i.e. how often will the system be overloaded)

Not applicable, because there are no permanent water quality features that could potentially overload.

6.7.3.3. Actions taken if stream is to be overloaded

Not applicable, because there are no permanent water quality features that could potentially overload.

6.7.4. Impacts of System Overload on Construction Activities and Water Quality

There are no permanent water quality features that could potentially overload.

6.7.5. Water Discharge Locations

6.7.5.1. Where water will be discharged

Water will continue to sheet flow and small channelized flow, as it did in its pre-developed state, to the surrounding wetlands.

6.7.5.2. *How water will be discharged*

Water will sheet flow through designed vegetative buffers, which are made up of native grasses, before leaving the Project site and entering an existing wetland.

6.7.5.3. *A site map indicating discharge locations*

See **Appendix R**, Erosion Control Plan-Appendix A, Exhibits 3-1 to 3-3

6.7.6. *Details of a Back-up System***6.7.6.1. *What type of back-up system will be used (include backup and standby equipment/power supply)?***

No backup system will be necessary on this project, because there are no permanent water quality features proposed that could potentially overload.

6.7.7. *High Flow Plan*

The Project areas with facilities are outside of any FEMA flood plains and the terrain slopes gradually to the east toward Lake Michigan. Flooding is not likely to occur on this Project Site.

6.7.8. *Contaminated Water*

The Project Study Area is primarily on agricultural lands, and, therefore, no contaminated water is expected on site. If unexpected contaminated water is encountered on site, the Project will follow procedures laid out in the Project SPCC plans. See Section 2.4.5.5 for a discussion of the SPCC Plan. Contaminated resources, if discovered, will be disposed of in accordance with applicable laws, ordinances, regulations, and standards.

7. Agricultural Impacts**7.1 Provide information on any ongoing farming activities on the proposed sites where construction activities will occur****7.1.1. *Identify current cropping patterns.***

In Manitowoc County, the two highest acreage crops are alfalfa/hay and corn. These two crops account for roughly 60% of the planted acres in the county with soybeans and winter wheat accounting for another 25% and a myriad of other crops making up the remaining 15%.

7.1.2. *Identify the location of drainage tile or irrigation systems on the proposed sites.*

Manitowoc County does not have a comprehensive file on all of the drainage tile or irrigation systems within the proposed Project Study Area. Per communication with the Manitowoc County District Conservationist within the NRCS at the USDA, Point Beach

Solar received the files located provided in **Appendix J – County Drainage Tile Documents** identifying potential areas that may have drainage tiles or irrigation systems and could be representative of the conditions which Point Beach Solar may encounter in the Project Site.

Despite the lack of formal drainage tile documentation, Point Beach Solar has engaged in discussions with agricultural landowners supporting the Project and were informed that drainage tiles exist on certain properties; however, the landowners do not have any maps or records identifying the location of the drainage tiles.

As a result, Point Beach Solar will coordinate with the current landowners of the Project parcel areas and will contract with a professional drainage tile company to locate, to the extent practicable, all drainage tiles on the Project Site as soon as possible after harvesting is complete. Point Beach Solar will attempt to refine the Project Site layout, if necessary, to avoid impacts to the existing drainage system, although some impacts may be unavoidable.

To the extent possible, major tile channels will be completely avoided. If impacts to a major tile line are unavoidable, the tile line will be rerouted post-construction. In the event that tile is damaged, cut, or removed as a result of trenching, it will be repaired or replaced depending on structural conditions. Point Beach Solar will make efforts to complete permanent tile repairs within a reasonable timeframe, taking into account weather and soil conditions.

7.1.3. Provide information on any farmland preservation agreements for the proposed sites.

No parcels at the proposed Project Site are enrolled in the farmland preservation program.

7.1.4. Indicate whether any lands within the project boundary are enrolled in the Conservation Reserve Program.

None of the project parcels are enrolled in the Conservation Reserve Program (CRP). Please see **Appendix Q** for communication and correspondence confirming that no land in Project Site is enrolled in the CRP program.

8. Airports and Landing Strips

8.1 Public Airports

Please see **Appendix P** regarding nearby public and private airports within 10 miles from the project boundary and a summary of impacts from the Point Beach Solar Project.

8.1.1 Identify all public airports inside the proposed Project Study Area.

There are no public airports/airstrips in the Project Study Area.

8.1.2 Identify all public airports within 10 miles of the Project Study Area and list the distance to the nearest proposed panel from the end of the runway.

There are no public airports/airstrips in the Project Study Area.

8.1.2.1 Identify separately all public airports within:

8.1.2.1.1 10,000 feet of the nearest panel

Not applicable.

8.1.2.1.2 20,000 feet of the nearest panel

Not applicable

8.1.3 Describe any mitigation measures pertaining to public airport impacts.

No impact to aircraft safety, intrusion in navigable airspace, construction limitations or permit issues have been identified. Accordingly, no mitigation measures are necessary.

8.2 Private Airports/Grass Landing Strips

8.2.1 Identify all private airports/landing strips within the proposed project boundary.

There are no private airports/airstrips in the Project Site.

8.2.2 Identify all private airports/landing strips within two miles of the project boundary.

There are no private airports/airstrips in the Project Site.

8.2.3 Provide the distance from each private airport/landing strip (ends of runway) to the nearest panel.

Not applicable.

8.2.4 Describe any mitigation measures pertaining to private airport or airstrip impacts

No impact to aircraft safety, intrusion in navigable airspace, construction limitations, or permit issues have been identified. Accordingly, no mitigation measures are necessary.

8.3 Commercial Aviation

8.3.1 Identify all commercial air services operating within the Project Study Area (i.e. aerial applications for agricultural purposes, state programs for control of forest diseases and pests (i.e. Gypsy moth control).

No commercial air services have been identified in the Project Study Area.

8.3.2 Describe any potential impact to commercial aviation operations

No impact to aircraft safety, intrusion in navigable airspace, construction limitations, or permit issues have been identified.

8.3.3 Describe any mitigation measures pertaining to commercial aviation

No mitigation measures are necessary.

8.4 Emergency Medical Services – Air Ambulance Service

8.4.1 Identify the provider/s of air ambulance services within the Project Study Area

No air ambulance services have been identified in the Project Study Area.

8.4.2 Describe any planned mitigation (e.g. establishment of safe landing zones, etc.)

No mitigation measures are necessary.

8.5 Federal Aviation Administration

Please see **Appendix P** regarding notice requirements to the FAA. Due to the proposed heights of installations at the facility, no such notices are required.

8.6 Wisconsin Department of Transportation – Bureau of Aeronautics – High Structure Permits

No structures on the Project that will require permits from the WisDOT. As referenced in Section 1.8, the only permits required from the WisDOT will be the DT1504 State Truck Highway Connection permit for the driveways required for the access roads for construction and the WisDOT Permit 1553 - Permit to Construct, Operate and Maintain Utility Facilities on Highway Right-of-Way (ROW).

9. Electric and Magnetic Fields (EMF)

9.1 Provide an estimate of the magnetic profile created by collector circuits.

A study estimating the magnetic profile of the collector circuits is provided as **Appendix G**.

9.1.1 *Show a separate profile for the typical buried collector circuits. If some trenches would support more than one buried circuit, provide a separate estimate for each bundled configuration.*

For **Appendix G**, separate profiles are being developed for typical collector circuits and areas where more than one circuit is located within a trench.

9.1.2 *Show a separate profile for any overhead collector circuits.*

There are no overhead collector circuits planned for the Project.

9.1.3 *Assume all panels are working and project is producing at maximum capacity.*

Appendix G will assume that all primary panels are working and producing at maximum capacity.

9.1.4 *Show EMF profile at 0 feet, 25 feet, 50 feet, and 100 feet from the centerline of each circuit type modeled.*

Preliminary magnetic profile estimates of four collector circuit configurations will be included in **Appendix G**. Table 9.1.4 provides a summary of the EMF configuration scenarios.

Table 9.1.4: Summary of EMF Configuration Scenarios

Summary	Magnetic field (mG)*
6 Parallel feeders – 750 kcmil each	27.3955
5 Parallel feeders – 750 kcmil each	28.5348
2 Parallel feeders – 750 kcmil each	25.3483
2 Parallel feeders – 750 kcmil & 4/0 American wire gauge (AWG)	18.3889
2 Parallel feeders – 750 kcmil & 1/0 AWG	17.1405

*By way of comparison, a typical microwave gives off 60 mG

**Table 9.1.5: Maximum Predicted Electric and Magnetic Field Strength
(Proposed and Existing Line Scenarios)**

Summary	Max electric field (kV/m)	Magnetic field (mG) *
Tangent monopole (138 kV Gen-Tie line)	1.9926	138.4958
Running angle monopole (138 kV Gen-Tie line)	1.8944	123.9222
Parallel lines - Tangent monopole (138 kV line) and H-frame (345 kV line)	2.0896	144.8202

*By way of comparison, a typical electric blanket gives off 0.25 kV/m and a typical microwave gives off 60 mG.

9.2 Stray Voltage Testing

Point Beach Solar does not anticipate issues regarding stray voltage as a result of the Project. Stray voltage issues are generally caused by improperly grounded and/or isolated electrical circuits found in older buildings, factories, or barns. Grounding for Point Beach Solar's PV array will be designed and certified by a licensed electrical engineer according to current applicable electric code requirements.

Despite the substantially low risk of the Project causing stray voltage, Point Beach Solar will conduct pre- and post-construction stray voltage testing at any agricultural facility located within 0.5 mile of the Project Site in coordination with the local distribution utility.

10. Noise

Point Beach Solar worked with PSCW Staff on the development of a Noise Study for the Project. The study, provided in **Appendix S**, utilizes PSCW-approved locations and durations and is described in more detail below.

10.1 Provide existing (ambient) noise measurements and projected noise impacts from the project using the PSC's Noise Measurement Protocol.

On February 27-28, 2019, Epsilon Associates, Inc. completed a pre-construction ambient sound survey of the substation, PV inverter, and solar array areas for the Project to quantify the existing acoustical environment. There are no sound producing components planned at the switchyard area. Work was completed in accordance with the Commission document "Measurement Protocol for Sound and Vibration Assessment of Proposed and Existing Electric Power Plants" (Noise Protocols). Aerial imagery, land ownership records, and field surveys were utilized to identify residences, schools, churches, hospitals, and other sensitive areas located near the Project.

Sound level measurement locations were selected and modified based on feedback from the Commission staff via conference call on February 15, 2019. Six sound level measurement locations were chosen in total.

Noise samples were taken at four periods throughout the day at each sampling location, as recommended by the Commission's Noise Protocols. The four periods included morning, midday, evening, and nighttime hours.

Noise levels recorded during the ambient noise survey indicated generally low background sound at all sites, with peaks occurring during times of heavier traffic associated with commuters to local areas of employment. Ambient L_{EQ} A-weighted sound levels ranged from approximately 40 to 53 decibels A-weighted (dBA) in the morning hours; 36 to 52 dBA at midday; 33 to 50 dBA in the evening; and 32 to 50 dBA in the nighttime. Results are typical of a rural environment with sources including vehicular traffic, aircraft, and natural sounds from wildlife (geese).

Expected noise levels were projected at the boundaries of properties near the proposed substation and array. The predicted sound level for the substation at approximately 725 feet is 45 dBA. The nearest residence to the substation is approximately 1,450 feet from the proposed location. Therefore, the sound expected at nearby residences will be less than 45 dBA.

The predicted sound level for an inverter cluster at approximately 400 feet is 39 dBA. This value is less than the nighttime impact required under Wisc. Admin. Code § PSC 128.14 of 45 dBA. The nearest residence to an inverter is approximately 460 feet away, therefore, the impacts of the inverters on the nearby residences will comply with Wis. Admin. Code § PSC 128.14.

A noise report is provided in **Appendix S**. The noise report conforms with all requirements of the Commission's Noise Protocols. The report includes, but is not limited to:

- the manufacturer's sound level characteristics for the proposed units operating at full load, including an unweighted octave band analysis at full operations at intervals from 100 to 3,000 feet from the facility;
- estimated cumulative sound levels from the proposed facility in dBA and decibels C-weighted (dBC) in at all receptors within 1 mile of the solar array;
- a contour map of expected sound levels from the new proposed facility with 5dBA increments out to a decibel level of 30 dBA, at or below background levels; Contours were not extended to a full 3,000 feet due to the dissipation of sound to background levels;
- discussion of expected impacts of the new sound and vibration source to the surrounding existing environment;
- expected changes to sound levels at each monitoring location are presented (for L_{eq} , L_{10} , L_{50} , and L_{90} in dBA and dBC); and
- assumptions made during the analysis of estimated sound impacts and conclusions reached regarding the potential effects on nearby receptors and people living near the Project Site.

10.2 Provide copies of any local noise ordinance.

State and local noise regulations were reviewed, and no regulations directly applicable to a solar facility were identified. In the absence of existing pertinent regulations, the Commission's Noise Protocols were utilized as a guideline for the Project.

10.3 Provide equipment manufacturer's description of noise attenuating methods and materials used in the construction of proposed equipment.

Noise resulting from the operation of the Project is anticipated to have minimal impact on nearby residences. No additional mitigation measures are anticipated if final equipment complies with the equipment specifications used for this analysis.

10.4 Describe how noise complaints will be handled.

In the event that there are noise complaints, Point Beach Solar will fully investigate noise complaints submitted by landowners. Point Beach Solar will facilitate the submission of complaints through the use of a dedicated contact and it will document all complaints. If after investigation the noise is found to be in violation of any CPCN requirements, Point Beach Solar will take the following actions: (1) determine if a reasonable and practical solution exists to resolve the issue; and/or (2) if appropriate, Point Beach will work with the landowner on a reasonable mutually-agreeable solution. Consistent with the Final Decision issued by the Commission in relation to the neighboring Two Creeks Solar Project, complainants may bring unresolved complaints before the Commission. *See Application for a Certificate of Public Convenience and Necessity of Two Creeks Solar, LLC to Construct a Solar Electric Generation Facility, to be Located in Manitowoc and Kewaunee Counties, Wisconsin*, April 18, 2019, Final Decision Docket No. 9696-CE-100 (PSC REF#:364423), pp. 26-27.

10.5 Discuss any mitigation measures that would be used to address noise complaints during the operation of the project.

As explained in Section 10.4, Point Beach Solar will work with stakeholders in an attempt to mitigate, if appropriate, and resolve the complaint.

11. Panel Glare**11.1 Provide an analysis showing the potential for glare from a typical project solar panel, and the project as a whole.**

Please see **Appendix T – Glint Glare Studies**, which explains there is no potential for glare from the Project. The studies include contours for 100, 50, and 25 hours per year of potential shadow flicker and lists the basic assumptions used and the methodology/software used for creating the shadow flicker analysis.

11.2 Describe mitigation available to reduce glare.

Based on the absence of any potential for glare from the Project, Point Beach Solar does not anticipate implementing mitigation measures for the Project.

11.3 In the event of an inquiry or complaint by a resident in or near the project area, describe what modeling or other analysis would be used to evaluate the possibility of glare at the residence.

In the unlikely event that there are glare complaints, Point Beach Solar will fully investigate such complaints with appropriate modeling and analysis techniques. Point Beach Solar will address such complaints consistent with the process set forth in Section 10.4, above.

12. Local Government Impacts

12.1 Joint Development and Other Agreements

No joint development agreements are currently contemplated with the local government.

12.1.1.1 All services to be provided by the city, town, and/or county during construction and when the plant is in operation (e.g. water, fire, EMS, police, security measures, and traffic control).

The maximum construction workforce is expected to generate approximately 50 additional vehicle trips per day on each road within the Project Site. Using any combination of state and county highways and other township roads throughout the Project Study Area, traffic impacts are considered negligible. The capacity of any route and level-of-service to the traveling public will not be affected. Construction traffic will be temporary with an anticipated duration of approximately 6 months. At the conclusion of the construction period, Project traffic will be minimal and associated with operations and/or maintenance activities. Traffic control on the part of the county will therefore be minimal. The Project will work with the local fire and police departments to ensure community readiness and the safety of facility employees and first responders. A fire safety protocol for the Project Site will be made available to local departments.

12.2 Infrastructure and Service Improvements

12.2.1 Identify any local government infrastructure and facility improvements required (e.g. sewer, water lines, railroad, police, and fire).

Construction of the Project will require new aggregate-surfaced access roads. During operation of the Project, the access roads will be used by operation and maintenance crews while inspecting and servicing the solar panels. The permanent access roads will be maintained during the operation of the Project and unless otherwise requested by the landowner, will be returned to its original condition upon Project decommissioning. The location and construction of the Project's access roads and other infrastructure shall, to the extent reasonably possible, minimize disruption to farmland, the landscape, and agricultural operations within the county. Prior to construction, the Project will make arrangements (including obtaining necessary permits) with the governmental organizations with jurisdictional authority over each road for road use access, road intersections, maintenance, and repair of roads. Point Beach Solar will be responsible for all maintenance associated with the panels and private roads accessing the panels during Project operation. Additionally, the Project will enter into a road maintenance agreement with the Manitowoc

County Road Department to ensure that all county roads within the Project Study Area are repaired or restored to a condition at least equal to the road condition prior to construction of the Project. Prior to and after construction, the Project will contact the County Road Superintendent and request an inspection of the haul routes. Where necessary, the Project will construct gates or fences. At the end of construction and throughout the life of the Project, the county and town will be left with improved road infrastructure. Besides maintaining roads, no other local infrastructure or facility improvements will be required.

12.2.2 Describe the effects of the proposed project on city, village, town and/or county budgets for these items.

There are no known effects of the proposed Project on the budget for Manitowoc County, City of Two Rivers, and the Town of Two Creeks.

12.2.3 For each site provide an estimate of any revenue to the local community (i.e. city, village, town, county) resulting from the project in terms of taxes, shared revenue, or payments in lieu of taxes.

Per Wis. Stat. § 76.29, revenue to the local community in terms of taxes will be disbursed at the State level as determined by formula outlined in Wisconsin State Statute Section 79.04.

12.2.4 Describe any other benefits to the community (e.g. employment, reduced production costs, goodwill gestures).

The Project will enhance the road infrastructure and create improvements for widespread benefit. During construction, 200-300 jobs will be available for up to eight months with one to three full-time jobs once the Project is operating. Due to the higher volume of people, local businesses will experience an increase in revenue because the workers will require places to eat, sleep, buy food and gas, and other day-to-day amenities. The Project also intends to be an active community partner as well. The Project has funded the Lakeshore First Robotics Team to date and continues to evaluate other opportunities included the funding of the Capitol Civic Center and being a sponsor at the Earth Fair in Manitowoc County.

13. Landowners Affected and Public Outreach

13.1 Provide a separate alphabetized list (names and addresses) in Microsoft excel for each of the groups described below:

With the exception of the mailings list for Governmental Agencies that are provided in **Appendix U**, consistent with Commission practice, the mailing lists associated with the Application will be separately provided to the Commission.

13.2 List and describe all attempts made to communicate with and provide information to the public. Describe efforts to date and any planned public information activities. Provide copies of public outreach mailings.

Point Beach Solar attended the City of Two Rivers Council Meeting in August 2018 and presented the proposed Project. Point Beach Solar also attended the Town of Two Creeks Board Meeting in March 2019 to present the Project, and answer and address specific questions and concerns. The Point Beach Solar Project team held another presentation at the Town of Two Creeks Annual Town Meeting on April 16, 2019. Notice of the Application will be sent to all abutting landowners. Non-participating landowners were also notified about the proposed Project in-person by our land agent. An email notifying local stakeholders and interested parties about Point Beach Solar's intent to file a CPCN, the docket number, a link to the PSCW docket and the Project fact sheet was sent on April 24, 2019 and can be found in **Appendix V**.

Copies of correspondence regarding the Project with specific Native American tribes are provided in **Appendix N**.

13.3 Describe plans and schedules for maintaining communication with the public (e.g. public advisory board, open houses, suggestion boxes, and newsletters).

The Applicant is in regular contact with Lee Engelbrecht, the Chairman of the Town of Two Creeks. Through that relationship, Point Beach Solar maintains regular outreach with the public and stays abreast of public events to attend. In August 2018, the Applicant presented an update of the Point Beach Solar project at the City of Two Rivers council meeting. On March 18, 2019, the Applicant presented an update of the Point Beach Solar Project at the Town of Two Creeks monthly board meeting. The Applicant spoke at the Town of Two Creeks Annual Meeting on April 16, 2019 and plans to attend the County Unit Meeting on May 16, 2019 to discuss the Point Beach Solar Project where all of the Townships in Manitowoc County formally meet. The team will continue to attend public meetings held by the township or county where possible.

The Point Beach Solar development team also maintains communication with the public through various community events and sponsorship opportunities. Point Beach Solar intends to sponsor Camp Invention again this year – the weeklong summer Science, Technology, Engineering, and Math program in Mishicot for elementary school aged kids in the area. The program was so successful last year Mishicot was able to fill this year's program in five hours with more than 100 children and are also trying to accommodate a 50-person waitlist. This year's sponsorship will cover the cost of camp materials and reduce the cost of the program to about \$40/person and provide admission for all children on the waitlist.

Point Beach Solar is also anticipates sponsoring the Manitowoc Miracle League – a baseball league for children and teens with special needs. The sponsorship will help purchase new uniforms for their team and to help with upkeep of the playground.

Point Beach Solar will continue to sponsor and attend public events throughout the course of the Project's development.

13.4 Identify all local media that have been informed about the project. The list of local media should include at least one print and one broadcast.

Due the confidential nature of the Project, no local media has been formally informed about the Project at this time. The Applicant has conducted a number of a local public outreach meetings and supported several sponsorship opportunities in order to inform the local community and municipality. Point Beach Solar also has a land agent that has been directly communicating with landowners over the last 24 months about the Project.